

HYGIENE OF CHILDHOOD

FRANCIS H. RANKIN, M. D.

LIBRARY OF CONGRESS.

Chap. R J 61 Copyright No.

Shelf R2.1

UNITED STATES OF AMERICA.

HYGIENE OF CHILDHOOD

SUGGESTIONS FOR THE CARE OF CHILDREN
AFTER THE PERIOD OF INFANCY TO
THE COMPLETION OF PUBERTY

BY

FRANCIS H. RANKIN, M. D.

PRESIDENT OF THE NEWPORT MEDICAL SOCIETY,
MEMBER OF THE NEWPORT BOARD OF HEALTH,
FELLOW OF THE RHODE ISLAND MEDICAL SOCIETY, ETC.



NEW YORK
D. APPLETON AND COMPANY
1890

2561

COPYRIGHT, 1890,
BY D. APPLETON AND COMPANY.

To the Memory of my Mother

LAURA WOLCOTT RANKIN,

THIS LITTLE VOLUME IS REVERENTLY DEDICATED

AS A FILIAL TRIBUTE OF ADMIRATION FOR HER

MANY YEARS OF EARNEST PHILANTHROPIC EFFORTS

TO ELEVATE THE

MORAL AND PHYSICAL WELL-BEING

OF THE YOUNG.

P R E F A C E

THE strength and prosperity of a community and a nation are largely influenced by the sturdy vigor of body and mind of the adult population; and, as the oft-quoted saying that the child is father to the man is true, and as the vigor at maturity must in a great measure depend upon proper guidance during the years of development, it follows that it is of the utmost importance that parents should have correct ideas on the personal hygiene and care of their children.

Notwithstanding that the study of the period of infancy and adolescence has received especial attention of late years, and that mothers are realizing more and more the vital necessity of hygienic observances at this time of life, the physician in his round of visits is made aware of a woful lack of knowledge, or perhaps appreciation, of the laws of health by mothers and by others who have the guidance of youth; and he feels that arguments demonstrating the necessity of closely studying the requirements of childhood can not be too frequently presented.

This little manual, on the care of children from the period of infancy to the completion of puberty, can not naturally be considered as embracing the entire question of the hygiene of childhood, but is intended merely to awaken serious thoughts in the mind of the mother relating to the care of her children; and it is hoped that the suggestions herein contained will afford practical aid, and enable her to avoid numerous hygienic sins of omission and commission.

NEWPORT, R. I.

CONTENTS.

	PAGE
PREFACE	5
INTRODUCTION	11
Death-rate of children and observance of the laws of health.— Low mortality among Indian children.—Deductions from Indian habits of life.—Result of proper and improper guidance during early childhood.—Moral training.—Regu- larity of habits a necessity for perfect health.	
DIETARY DURING CHILDHOOD	18
Material for healthy development.—Simplicity of food.—Over- taxing the digestive organs.—Purposes for which food is taken.—Importance of a due amount of carbonaceous and nitrogenous elements and of mineral salts.—Necessity of variety of food.—Consideration of milk, cereals, oatmeal, sweets, eggs, and meat.—Natural craving for acid fruit.— Articles of diet.—Indigestible food, pastry, spices, tea, coffee, etc.—Abundance of food during school-days.— Regularity of meals and eating without hurry.—Effects fol- lowing errors in diet.—Fatigue affecting the appetite.— School lunch.—Indigestion inducing catarrh of the upper air-passages.—Children following their own fancies in eat- ing.—Educating the appetite.—Evil results of misguidance in dietary.	
PROTECTION OF THE BODY	39
Physiological action of cold.—Standard heat of the body.— Animal heat.—Nerve-force exhausted, and excretory glands of the skin affected by cold.—Harmfulness of short socks. —Dressing for effect.—Woolen and linen underclothing.— Our changeable climate.—Benefits of ample protection,	

and dangers of scanty clothing.—Protection of feet and legs.—Draughts.—Effect of cold upon the digestion.—Too much clothing.—Overcoats.—Dressing of girls.—Night-clothing.

IMPORTANCE OF PURE AIR 54

Oxygen as food.—Detection of impure air.—Source of air pollution.—Deleterious effect of impure air.—Air of the nursery.—Poisonous exhalations from lungs and skin.—House filth.—Micro-organisms.—Ventilation.—Catarrhal condition.—Breathing through the nose.—Mouth breathing.—Its dangers.—Delicacy of frame the result of modern ways of life.—Benefits of free ventilation.—How to preserve pure air in the house.—Damp cellars.

EXERCISE A REQUIREMENT FOR HEALTH 72

Its effect.—Result of its neglect.—Combining physical and mental training.—Outdoor games.—Lawn tennis for girls.—Exercise *versus* drugs.—Indoor life and its result.—Outdoor exercise in all weather.—Growing pains.—Play-room.—Toughening children.

SLEEP 80

Dr. Hammond on sleep and rest.—Sleep during childhood.—Its duration.—Noonday nap.—Symptoms resulting from too little sleep.—Its importance where hereditary weaknesses exist.—Its effect upon the nervous system.—Avoidance of romping and excitement at bedtime.—Night terrors.—Means favoring sleep.

REGULARITY OF THE BOWELS 86

Removal of waste material from the system.—Constipation during school-days.—Causes of constipation.—Its effect upon health and method for overcoming the same.

CARE OF THE SKIN 90

Eliminative function of the skin and danger of interfering with it.—Baths.—Effects of cold and warm baths and their dangers.—Temperature.—Daily sponging.—Suggestions regarding delicate children.—Friction.—Salt-water bath.—Its duration.—Wading or paddling.

	PAGE
EDUCATION	100
Increase of the diseases of the nervous system, and causes.—	
Protection of the nervous system.—Diversion of nerve-force	
from nutrition.—Early stimulation of the brain.—Age of	
commencing school.—Kindergarten.—Precocious children.	
—Hours for exercise and sleep infringed upon.—Results of	
overstudy.—Returning to school after serious illness.	
SCHOOL HYGIENE	106
Loss of health as a result of defective school sanitation.—	
School lunch.	
DISCIPLINE	108
Obedience and self-control.—Respect for elders.—Sugges-	
tions for inculcating obedience.—A physician's experience.	
—Cause of disobedience.	
HYGIENIC REFLECTIONS	111
Laws of health as fixed as other physical laws.—Herbert	
Spencer on children.—Causes of degeneracy of health.—	
Symptoms indicative of lack of physical vigor.—Hereditary	
tendencies overcome.	
PUBERTY	115
History of a case as a text on hygiene during puberty.—Com-	
parison of life to-day with the life half a century ago.—	
Sins of the parents visited upon the children.—Indications	
of approaching change.—Special care.—Protection of the	
body and feet.—Mental strain.—Sleep.—Nervousness, its	
indication.—Constipation.—Opinion of Dr. Emmet.—What	
to avoid during the catamenia.—Bathing during the month-	
ly period.—Absolute rest not intended by Nature.—Girl in	
her "teens."—Commencing school without breakfast.—	
Combining school and social duties.	
APPENDIX	137
Mortuary statistics and deductions therefrom.	

HYGIENE OF CHILDHOOD.

INTRODUCTION.

UNTIL within a very recent date, nearly one half of the total mortality in the larger cities throughout our country was of children under five years of age.* This fact affords matter for the deepest consideration, and a thoughtful mind will naturally question the reason of so great a destruction of life among the young. Investigation shows that this large mortality was mainly due to a disregard of the laws of health, and that obedience to these laws will very materially reduce the death-rate. The correctness of this statement may be verified by a study of the mortuary statistics of large cities during the past fifteen or twenty years, in connection with the sanitary reforms in these cities; and also by a comparative study of mortuary tables exhibiting the differ-

* See Appendix.

ence in the death-rate among children in large and small cities, from which tables it is evident that, wherever the laws governing life are most carefully followed, there will be found a lower mortality during early life. When the death-rate among children in larger cities can be materially reduced by improved general sanitation, it is obvious that the health and vigor of children in their homes can also be improved by close attention to their personal hygiene.

It is interesting as well as instructive to contrast the death-rate among children living in modern cities with that among the Indians when living in their primitive state, before they were contaminated by the vices of the white man. Catlin, an earnest student of the customs and habits of the Indian tribes of North and South America, who visited one hundred and fifty tribes, containing over two million souls, tells us that he was struck with the low rate of mortality among their children. He states* that in one tribe, numbering two thousand souls, he learned from the chief that the death of a child under ten years of age was a very unusual occurrence; and in examining the cemetery of the tribe,

* George Catlin, "Breath of Life," p. 10.

where the dead, enveloped in skins, were left resting separately on little scaffolds of poles, he could discover, among one hundred and fifty embalmments, but eleven of children. Statistics from every other tribe visited corroborated the same statement. In one of the smaller tribes, there had occurred during ten years only three deaths among children under ten years of age. The query arises as to the cause of this wonderful difference in mortality between civilized and primitive communities. The life of the uncivilized Indian child of the past was a mere animal existence: his ancestral stock was sturdy and healthy, he breathed a pure air, was given simple food, had abundance of sleep, and nothing to excite and exhaust the nervous system. In early life he was well protected from cold, and was taught regularity of habits and self-control. How this contrasts with the *personnel* of most children of to-day can be best answered by each mother.

Naturally we would not advocate going back to the habits and life of the savage in order to obtain vigor of childhood, but certainly instructive lessons may be learned by studying the causes which led to vigorous health among Indian children. Owing to the requirements of civilization, which demand of us more than a mere animal existence, we can

not expect the low rate of mortality that existed among the Indians in their primitive state. We can and should have, however, with the highest state of civilization, a far lower death-rate among children than generally exists. The requirements of health are all extremely simple, and can be brought into application in every household. The drawback to the modern life—as far as it affects childhood—has been that study and cultivation have been extended to what have been considered weightier matters than the physical and nerve health of the young, which has been more or less neglected. Traditional customs have been the rule for guidance rather than true intelligence.

The benefits derived from following certain laws and regulations necessary for the maintenance of health throughout the period of infancy, are appreciated by all observant mothers. They recognize the importance of the formation of regular habits at an early age, and also the necessity of a full amount of sleep at regular hours; of a carefully selected variety of food given at stated intervals; of the protection of the body from chill by proper clothing; of pure air to breathe indoors; of cleanliness and plenty of sunlight and outdoor air.

After babyhood, vigilance in following the regu-

lations observed during infancy is so often relaxed that I desire to impress upon my readers the fact that it is of equal importance to enforce these same rules during the whole period of childhood, in order that the development of the child may not be retarded or interfered with.

Infancy includes the space of time from birth to the completion of the first dentition—about two and a half years—when childhood may be properly said to begin. The little one can now make known its wants and discomforts; the dangers incident to dentition are over; the nervous system is less susceptible to all impressions, and not so easily disturbed by injudicious feeding or exposure to cold, dangers which are so disastrous at an earlier age.

In proportion to the proper guidance and attention given the child during the earlier years of life will be the strength of its body at maturity. This subject, the care of children, is one that should be studiously considered by all parents, and should receive more earnest thought than any duty; for, through want of knowledge on this subject, thousands of parents are guiding to a physical perdition, and leading to an early grave, their children, for whose future happiness they would willingly sacri-

fice their own lives. The physical wreck in middle life, by which the usefulness of the individual in the community is thwarted, and which blights his hopes and ambitions, after years of preparation, too often originates during the years of development. Through faulty management during the period of youth, the muscles, bones, sinews, nerves, and various organs of the body, have not a hardy maturity. As a result, the apparent strength in early manhood is not enduring, the feebleness of tissue and defective nerve-force can not withstand the demands made upon them in the battle of life, and the individual, like a badly framed and timbered ship in a storm, is unable to withstand the strain, and is wrecked.

Moral, mental, and physical training of children are equally important, but I shall chiefly confine my remarks to the physical, which, if properly conducted, insures a more complete enjoyment of a good moral and mental training. I wish, however, to suggest one thought for consideration, namely, that the moral welfare of a being is very often dependent upon, or influenced by, the physical and mental condition. With a healthy body and healthy nerve-force there is far less likelihood of a low state of morals than when the physical system

is imperfect, when the digestive organs have been perverted by improper and too stimulating food, and the nerve-force exhausted by too profound mental work, and an insufficient amount of sleep during the period of youth.

In the works of Nature, unvarying regularity must be observed in order that perfection may be attained, and the workings of the human organism are no exception to this established rule. The organs of digestion acquire the habit and power of digesting food at regular intervals, the bowels of discharging the waste material, and the brain of seeking repose; and various disturbances in their functions and in the system result if there is any interruption in their habits.

During these important years, therefore, when the child is rapidly developing, no pains should be spared to establish habits of regularity. They are essential to a healthy existence. When once fairly established, Nature's love for order will create a desire in the child to continue these habits. That which at first may have been difficult to implant, takes deep and permanent root.

DIETARY DURING CHILDHOOD.

All the tissues and organs of the body require for their healthy development blood of a good, nourishing quality and of sufficient amount, to obtain which it is essential that the material from which the blood is made, food, should be suitable both in quality and quantity, and that the digestive organs which transform the food into blood should perform their functions in a perfectly healthy manner.

It is a truism that, during childhood, simplicity of food is essential to perfect digestion. In order that the functions of digestion may be properly carried on, such food only should be given as can be digested with ease, and then these functions should be allowed an interval of rest before the next meal. By rest, is meant a period of time when the glands—whose duty it is to manufacture the digestive fluids—are not in active operation.

This glandular activity ceases only when there is no food in the stomach and intestines, or when the food is in a condition for absorption. If the necessary amount of rest is not obtained, then these glands are kept too long in a state of congestion,*

* By congestion is meant that a greater amount of blood is supplied to the part in question than is the case when the part is in a

and soon cease to do their work properly, and there results what is commonly called an attack of indigestion, the stomach and bowels becoming irritable, and loss of appetite and strength, fever, pain, vomiting, diarrhœa, etc., ensuing. It is just as absurd to expect that the stomach of a young child should be capable of digesting the hearty food suitable for an adult as to expect that its arms should lift as heavy a weight, or its legs should carry it as fast or as far.

Food is taken into the body for the purposes of growth, for the formation of animal heat, and for the restoration of tissues that are destroyed or used up in the maintenance of the various functions of the animal organism. It may be subdivided into three great classes—the carbonaceous, the nitrogenous, and the mineral salts and water.

The oily, fatty, and saccharine elements in food

state of repose or inactivity. When any one function of the body is called into activity, as the brain in thinking, the stomach or intestinal canal in digesting, the liver or any of the various glands or organs of the body in the performance of their duty, there instantly takes place an accession of blood at the point of increased activity, and a healthy state of congestion takes place. If, however, this congestion is too long maintained from the excessive amount of work required, the healthy action of the gland or organ is interfered with, and a diseased state is the result. Congestion is also brought about through the agency of cold, as we shall see later on.

—classed as carbonaceous—are chiefly appropriated for the formation of heat and the nutrition of the nervous system, and that which is not immediately utilized is deposited as fatty or adipose tissue beneath the skin. This adipose tissue fulfils a three-fold mission—it rounds out and beautifies the body ; it protects the inner organs and deeper structures from injury ; and is a reservoir for providing the heat-making powers with fuel and the nervous system with food whenever an extra amount is called for. The nitrogenous element in food is principally used in the formation of the muscular structure and the fibrous framework, and derives its chief supply from animal meat ; eggs, and some of the cereals and vegetables, however, furnish a large amount of this element.

Purely carbonaceous food can not supply material for building up strong muscular or fibrous structure, nor can purely nitrogenous food keep up the necessary degree of animal heat and vigorous nerve-force. A mixed diet, therefore, is essential to the proper development of the body. It is, moreover, important to give due thought to the character of food, in order that every tissue may have abundance of its own necessary nutriment. That is, the bony structure should be able to select,

from the food taken in, sufficient phosphate of lime and other mineral salts for the building up of a firm, solid framework. The muscles should have an ample amount of nitrogenous food in order that they may grow stronger. So, too, the nervous system demands a large supply of food containing fat and the phosphates in order that it may possess a healthy nerve-force and the ability to maintain the necessary degree of animal heat.

During the early months of life, milk furnishes all that is requisite for the development of every part of the little being. But with growth there is an increased demand upon the muscles and other tissues for work, so that additional and heartier food is required to maintain a sufficient supply of nutriment. Milk, however, containing as it does elements that nourish brain, muscle, and nerve, and give fuel for animal heat, should constitute one of the staple articles of diet for all children throughout the whole period of adolescence, and its use should always be encouraged. It is unequalled as an article of food for the young, since all its component parts are quickly assimilated and appropriated in the system without any undue tax upon the digestive organs. The fat of milk being in a state of fine subdivision and readily taken up by the ab-

sorbents of the digestive tract, is especially beneficial and more acceptable than the fatty elements contained in other varieties of food.

Children after leaving babyhood not unfrequently rebel against milk, manifesting a disgust for it. Parents should be careful not to yield to these whims, as in the vast majority of cases it is nothing but fancy, for this food is too valuable an article of diet to be hastily put aside. If the milk is very rich with cream, it may occasionally give rise to disordered digestion, especially with children of a so-called bilious temperament. The milk from the Alderney cow may not agree with some children on account of its richness in cream, while that from the common cow will be perfectly acceptable. In fact, with the majority of children, young and old, the milk from the common cow is preferable to that from the Alderney. When there is an actual distaste for milk, the addition of a little salt will give it more relish, just as salt improves the flavor of meat.

Certain of the cereals rank next to milk as articles of nutriment. Oatmeal, wheaten grits, hominy, imperial granum, rice, and farina are the most valuable, and should form part of the child's diet. Of these oatmeal is the richest in nutriment.

Analysis shows that it contains a higher percentage of fat and mineral salts (phosphate of lime chiefly) than any of the other cereals, and with the exception of corn it contains more sugar. It is also rich in nitrogenous or albuminous principles, but has a smaller percentage of starch than the other grains. There is one other element in oatmeal which may become as much a source of danger as it is of benefit. I allude to the cellulose or cell structure. It contains more of this waste material than any other cereal. The danger lies in the fact that the digestive fluids can not obtain ready access to the nutriment incased in this cellular structure when insufficiently cooked, as is too often the case, and the grain is thus rendered an indigestible article of food for a delicate stomach. Oatmeal should be given at least two and a half or three hours cooking, in order to disintegrate or break up the hard, cellular envelope surrounding the true nutriment. When thoroughly cooked it will lose its granular form and assume a gelatinous appearance. The cellular or waste material is beneficial because its presence in the bowels stimulates the peristaltic action and promotes daily evacuation. In proportion to size the child requires a greater amount of food for nerve nutrition and for developing heat than the fully devel-

oped man ; this is necessary in order to supply the wants required in growth and the force expended in restless activity.

In addition to fat, there is another article which is heat-making, namely, sugar, and also to a slight degree the starch of farinaceous food, for the starch is converted into sugar in the system. The natural longing for sweets is often more than a desire to gratify the palate. It is a craving upon the part of nature for carbohydrates. It is, therefore, perfectly natural, under certain restrictions, to give sugar or molasses with food. The great danger, in giving saccharine articles of food, consists not so much in their use as in their abuse. A certain amount of sugar or candy is harmless for children, but it should be given with food, or immediately after eating, and in small quantities. When sweets or candies are given between meals, an acid fermentation is apt to take place, the digestion becomes deranged, the appetite fails, and does not return until the sweets are abandoned. Children whose diet is largely composed of farinaceous food and milk, with a proper amount of butter, do not as a rule crave sweets as strongly as when these articles are sparingly given. The rule I would suggest is that, when a child is vigorous, with digestion in good order, and takes

plenty of milk and farinaceous food, you may give sweets and candies in moderation; but when the digestion is defective, appetite poor, tongue coated or the child is delicate, sweets should be withheld.

Eggs constitute a concentrated and digestible nutriment. The white is composed chiefly of albumen, a nitrogenous element, and the yolk largely of fat.

Meat is essentially a nitrogenous article of diet; it builds up the muscles, but, as muscle-making or nitrogenous elements are also found in farinaceous food, white of eggs, and milk, a large amount of meat is not necessary. On the contrary, it is actually injurious, as, if it forms the greater part of the meal, it thereby deprives the system of the fat and nerve making food, which is so essential for animal heat and nerve-force, and it, moreover, acts as an irritant upon the bowels and kidneys. Young children who are large meat-eaters are very slender, prone to have coated tongues, foul breath, and indigestion. They are also given to talking in their sleep; whereas, when the diet consists largely of milk, farinaceous food, light vegetables, and only a judicious amount of meat, children are fatter, have a healthier complexion, rosier cheeks, and are generally of a happier, brighter disposition. It is well to

teach children, when they are old enough to take hearty food, that they should eat the fat of meat. Fat is important for developing nerve-force. It is also essential, as we have already stated, for keeping up animal heat, and furnishes the basis of all cell nutrition. By fat we do not mean grease. The natural fat that is taken with meat, milk, and butter is wholesome and desirable, and is very easily assimilated; but made meat-gravies and all kinds of food fried in grease are indigestible, and should never be given to a child.

An instinct evinced by most children is the desire for vegetable acids—in the form of fruit. This desire should be indulged. Where note is taken of what nature thus craves, by supplying a sufficient quantity of good ripe fruit, the child will not resort to the sour, unripe apples, gooseberries, and other fruit which are such prolific causes of bowel trouble in summer. Ripe fruit is not only acceptable to children, but it is an important article of diet for them. When fruit is taken in moderation, the vegetable acid contained therein exerts a beneficial effect upon the digestive organs, being in itself a good tonic.

During the early years of childhood—that is, from two to six years of age—milk should consti-

tute the greater portion of the food ; of course, farinaceous food, easily digestible vegetables, good ripe fruit, eggs, and meat should be given. The importance of the last article, meat, is however apt to be overestimated during early life. A little fresh meat once a day should be given, but, except from ill health, and by the advice of a physician, a child under seven should never have meat more than once a day.

As the child approaches the age of eight or nine years—when it is full of life and vigor—meat is generally required more than once a day—that is, meat with the dinner, and a little in the morning for breakfast. Be careful, however, not to let meat diet crowd out other varieties of food. A vigorous child of twelve or fourteen years of age requires as much nutriment as a grown man. The taste for fresh vegetables should be cultivated ; roasted and mashed potatoes, fresh peas, string beans, asparagus, boiled onions, lettuce, and spinach, are especially digestible and desirable for children over three years of age. The vegetable acids assist digestion, and the cellular matter contained in the vegetable, by stimulating the bowels to healthy action, is instrumental in eliminating from the system waste material. Celery and tomatoes raw, also

the following cooked vegetables—beets, cauliflower, turnips, corn, parsnips, carrots, cabbage, egg-plant—should be given only to older children. Ham, pork, liver, tongue, corned beef, and all salted fish are difficult of digestion and should be forbidden food for young and delicate children. Fresh meat should be either roasted, boiled, broiled, or stewed, but should never be fried. Fresh fish and oysters are wholesome, and help to vary the bill of fare for older children. Pastry, fresh home-made bread, and hot biscuits are articles of food very difficult of digestion, and should never be given to young children. If a child of twelve or fourteen years of age is robust, has good digestion, and eats heartily of proper food, pastry can now and then be given, but should be absolutely avoided under any other circumstances. To a child under thirteen years of age tea and coffee should never be permitted; indeed, it would be better to postpone their use as long as possible. They are unnecessary; besides, they are excitants, and are prone to derange the digestion. To maintain a healthy digestion all stimulating food should be rigidly avoided. Pickles, pepper, spices, and highly seasoned food should be forbidden, not only for the same reason that we forbid tea and coffee, but

because they pervert the appetite, create in the child a desire for highly seasoned food, which desire, when fostered, leads in turn directly to intemperance in later life. If, during childhood and early youth, the stomach were kept free from the baneful influence of all stimulating food, I am convinced that there would be fewer drunkards.

A child of from three to five years of age is too frequently put to bed immediately after eating a supper consisting of milk, bread and butter, and a liberal allowance of jam. The mother or nurse comments the following morning on the restless or dreaming and startled sleep of the child, and rarely connects the supper allowance of jam with the resultant night-dreams. The supper of a child of this age should be very simple — bread and milk, or cereals and milk, with bread and butter is all that is necessary. The jam causes indigestion, distends the bowels with wind, and disturbs the whole circulation, especially of the brain.

Little or no harm will be experienced by permitting a child to completely satisfy the appetite, provided the food is thoroughly masticated and eaten slowly. It is only when indigestible food is taken, or when the food is “bolted,” that there is danger of overfeeding and of harm ensuing.

Children during school-life must be abundantly fed, for not only is the growth rapid but there is a great wear and tear of body and mind while at work and at play. If they are not properly nourished at this critical time, they develop badly, their blood becomes poor, and hereditary tendencies are encouraged. Variety and palatability of food must be studied as well as regularity of meals. At this period—that is, after six or seven years of age—it is always important to see that the interval between meals is not too long, for by prolonged fasting many children are very much injured. A glass of milk, or a little bread and butter between breakfast and dinner, or between dinner and supper, is a great help in sustaining strength and vigor, and very important to a child who is delicate, or whose appetite is small. It is permissible, also, to give between meals, to a child who is taking a great deal of exercise, light, digestible food of the kind mentioned, provided it is given with a degree of regularity, and not near the hours for the regular meals. If, on the other hand, the child is allowed to eat at irregular intervals, whatever and whenever the appetite dictates, the functions of digestion are often so perverted that, for the remaining years of life, he is likely to become a confirmed dyspeptic; and

dyspepsia, as we know, is but the starting-point of many diseases. Sir Henry Thompson, in his little monogram on "Diet in Relation to Age and Activity," says . . . "I have for some years past been compelled, by facts which are constantly coming before me, to accept the conclusion that more mischief in the form of actual disease, of impaired vigor, and of shortened life, accrues to civilized man, so far as I have observed in our own country and throughout Western and Central Europe, from erroneous habits in eating, than from the habitual use of alcoholic drinks, considerable as I know the evil of that to be." *

If erroneous habits of eating have such a baneful effect upon adults, the effect upon those of tenderer years must be manifestly greater; and it certainly behooves parents carefully to scrutinize the quality of food provided for their children, as well as the manner and time of taking it.

Whenever the digestion is deranged, there is not only a deprivation of a certain amount of nutriment, but the incomplete products of digestion, which are taken into the circulation, exert a deleterious effect upon the nervous system, and create

* Sir H. Thompson, "Diet in Relation to Age and Activity," p. 4.

more or less irritability of temper, or a condition of moroseness. When this state is of short duration, no serious results follow; but when frequently repeated, or if long continued, a lasting impression upon the temperament and physique is the result. Then, again, if the digestive tract is frequently disturbed, and especially if the liver is kept in defective action, owing to irregular or improper kinds of nutriment taken during the period of youth, that time when the healthy growth and development of these parts should take place, an imperfect or morbid development is apt to ensue, which must result in impaired health and disease in later life.

During the period of school-life, meals are apt to be taken with great irregularity. Hurrying to school, and again hastening to afternoon play, cause the child to forget hunger in the eager desire to join his comrades; then coming home with hearty appetite sharpened by exercise, he will eat often whatever he can find, however indigestible, and the true appetite for the following healthy meal is gone. The child should not only have his meals regularly, but he should be compelled to spend sufficient time at them—to eat slowly and without excitement. Food should be carefully cut in small pieces before putting it into the mouth, and masti-

cated thoroughly, in order that, when it reaches the stomach, the digestive juices can act upon it and more readily reduce it to a solution for absorption. Hurry and excitement when eating divert the attention of the nerve-force from the act of digestion, and consequently food is not so well digested. Repose and quietness, on the other hand, favor the digestive act. It is therefore important that a child should be compelled to eat slowly, and never be permitted to leave the table until all shall have finished; otherwise the food is likely to be insufficiently masticated, and the habit of "bolting" his food will soon be acquired.

It will be often observed that children of delicate physique, possessing an active and nervous temperament, play with so much earnestness that, although eating generously for breakfast, they have a poor appetite for dinner and supper, and in consequence do not obtain the necessary amount of nutriment. This too active exercise just before meal-time creates a physical exhaustion which the child in his excitement does not recognize, but which has affected his digestive organs. This failure of appetite may be averted by enforcing complete rest for half an hour or more preceding each meal.

A child's digestion may be seriously impaired by unsuitable lunch prepared for him to take to school. Such injurious things as pies, cakes, and sweets, are slipped into the basket, to "tempt his appetite," or he is given a few pennies with which to purchase tarts and cakes from the nearest confectioner. I need not say that this habit is productive of immense mischief; indigestion, a sour stomach, and loss of appetite for the regular meal awaiting his return from school, are but a small part of the damage. The lunch should be simple, appetizing, and put up in an attractive form, in clean fresh doylies rather than paper as a wrapper inside the basket, and it should consist of nicely prepared bread and butter, or sandwiches made with mutton, beef, or chicken, finely chopped or in slices, one or two hard-boiled eggs for older children, or the yolk of a hard-boiled egg. A little stale sponge-cake, or a few ginger-snaps, or well-cooked gingerbread and fruit, may be allowed, provided there is a certainty that the more substantial nourishment is also eaten. Sandwiches made with ham or cold corned beef should not be given. A child under ten years of age should never be kept at school long enough to necessitate carrying a luncheon. If the school opens at nine o'clock, the child should

return by half-past twelve, and the school hours for the day be finished. In the case of older children, the custom existing in many country towns of a long intermission from twelve until two o'clock is certainly beneficial to health. It allows sufficient time to walk home leisurely, and to eat quietly, so that the digestive process is fairly under way before returning to the afternoon duties.

Errors in diet bring about disastrous effects aside from depriving the child of robust health through lack of the proper kind of nutriment. There is a close relationship between the digestive organs, the mouth, the upper part of the throat, and, to a certain extent, the nose. This connection is in a measure evident to every one who has given any thought to the symptoms of disease, as shown in the coated tongue; and most observant mothers recognize that croup and canker-sore mouths are manifestations of stomach trouble, few realizing, however, that swollen tonsils, sore throat, thickened and roughened catarrhal state of the back part of the throat and nose, may originate from the same cause which gave rise to the coated tongue. False croup, which strikes terror to the heart of the mother by its sudden advent at night, is almost invariably due to some error in diet on the day previous, or is the result

of cold disturbing the digestion and arresting the action of the liver. Canker in the mouth, or an ulceration of the mucous membrane of the mouth, is the direct result of an acrid condition of the stomach. So, too, a general catarrhal state of the upper air-passages (nose, pharynx, and larynx) is frequently resultant from oft-repeated errors in diet, as when pastry, too much sweets, condiments, and other improper articles of food are given; and when this catarrhal condition is brought about from other causes, it is fostered and aggravated by mal-digestion.

Unwholesome food, therefore, exerts a twofold injury on a child: through its irritating effect, there is a loss of appetite, lack of perfect assimilation of food, and consequently a deprivation of proper elements for building up healthy tissue; and also the induced indigestion frequently creates a catarrhal state of the upper part of the throat and nose, a condition, which, as I shall explain later on, is of great detriment to perfect health.

The question should children be permitted to follow out their own fancies regarding the food they are to eat, is a subject often discussed by parents. Because there is a dislike to oatmeal, or hominy, or meat, or milk, or any other article of food suitable

for a child, shall this dislike indicate the bill of fare, and the distasteful article be omitted? I must from my own observation give a negative answer. A young child is a perfectly helpless being, dependent for all things upon the guidance of its elders; without instruction it is incapable of selecting proper food. I might almost say that the appetite is by nature perverse, and requires as much guidance as the morals and education. The youngest child will often take with apparent relish tea, coffee, wines, brandy, spices, and food which a judicious person knows must be harmful to its delicate stomach. In the majority of cases a child's taste may be cultivated for any article of food. Unsavory food, insufficient cooking of farinaceous food, and sameness of bill of fare, aside from notions and whims, are great causes for creating dislike to certain articles of diet. The same food should not be given with such frequency that children begin to dislike it. It must be remembered that a variety is essential to good appetite and digestion.

One mother will say that her children will not eat farinaceous food, another that they will not drink milk, another that they will not take vegetables. When this is the case, the inference is that the mother has not exerted proper control, or com-

menced the guidance of her children early enough. With a few exceptions every child can be taught to take farinaceous food, milk, vegetables, and all articles suitable for a child to eat. In cultivating a liking for a distasteful food, place only one or two tea-spoonfuls of the food on the child's plate, and insist upon it being eaten or taken as a dose of medicine; if this is repeated from time to time, but not too frequently, the taste for the food will in the majority of instances be acquired. If, however, a large quantity of the distasteful article is placed before the child, the horror and disgust for it will be intensified. I have known a great many instances where, by following this suggestion, children have acquired a fondness for the food which they formerly abhorred.

Enforcing a bill of fare that is distasteful requires, however, good judgment, because children as well as adults have idiosyncrasies, and may be unable to digest certain food even though it be good. If, therefore, after a fair trial, it is fully ascertained that a child thoroughly abhors certain articles of diet, and can not digest them, it is only right that the objectionable articles should be discarded. It often happens that children who are whimsical and notional about food, who rule their parents, and are

their own guides as to what they will or will not eat, are apparently none the worse for the improper food; it is when illness overtakes them that the results of this misguidance are apparent. I recall many instances where children, who, when in health, had been allowed to gratify their appetites, and had never been taught to exercise self-control and, to observe obedience in eating, have refused, when they became seriously ill, every article of diet usually administered to the sick. Nourishment was given only under an excitement and struggle, although pie, cake, hot bread, and other accustomed articles of food were called for. How different the case when a child obeys and takes all food given! I have known, repeatedly, cases where the lives of children, precious to their parents, could have been saved if the parents had exercised a little more judgment, and had not only taught their children to eat proper kinds of food, but had enforced obedience in eating whatever was placed before them.

PROTECTION OF THE BODY.

The physiological action of cold and its dangerous effect upon the human frame seem to be imperfectly understood by most parents. They associate

the immediate result of a cold, in creating a cough, or some disorder of the breathing apparatus, as about the only evil resulting from undue exposure, or from chilling the surface of the body through too scanty clothing, and appear to be unaware of the disastrous disturbance a cold produces in other organs of the body. It is a peculiarity of the human frame that a definite standard of heat must be maintained in order to have perfect health. This standard is always the same, whether one is living in the arctic region or at the equator, the body having means within itself of preserving this fixed degree of temperature. The forces that originate animal heat make a positive requisition upon the nutriment taken into the system for enough material from which is developed the heat necessary to maintain the required degree of temperature. This amount they must have, and that which remains, be it much or little, is appropriated for growth and the renovation of the tissues that are wasted. When the body is not sufficiently clad, there is a loss by radiation of a certain amount of heat, a lowering of the surface temperature. This necessitates an extra effort of the system to supplement the heat that has been lost in order to preserve the proper standard, and an expenditure of material which could other-

wise have gone to build up the frame and strengthen the tissues of the body. Should this expenditure continue for any length of time, the result would be a body small in size, or inferior in texture, or both.

Inasmuch as but a definite amount of food can be taken into the body, and from this all the animal heat must be developed, as well as all the material for growth obtained, it is of the greatest importance that the body should be thoroughly protected during the maturing years, so that the growing tissues may not be deprived of their full share of nutriment through any unnecessary call for material in the formation of heat. Liebig says, "Our clothing is, in reference to the temperature of the body, merely an equivalent for a certain amount of food." When the body is insufficiently clothed, the nerve-force is in a measure exhausted in its efforts to maintain the normal temperature, and in consequence there is a depression or loss of vitality, with a resulting disturbance of all the functions, in addition to a defective nutrition of the tissues. In other words, cold is a powerful nerve depressor.

The blood is, moreover, driven by the cold from the surface of the body to the inner organs, producing in them a low form of congestion and an added

impairment of their functions. The excretory glands of the skin are also hindered in their duty through insufficient protection. It is to be borne in mind that the skin excretes, or allows to pass through it, a large amount of waste or used-up material. In the adult from one to two and a half pints of fluid, containing effete or deleterious matter, pass through the glands of the skin every twenty-four hours. It is computed that there are no less than seven million respiratory glands on the surface of the body of an adult of ordinary size, and that these glands, if placed end to end, would cover a distance of nearly twenty-eight miles.* In the child there is naturally a smaller number of glands. Proportionately to its size, however, the skin of a child excretes more fluid than that of the adult. Now, if the skin is not properly protected, the blood which carries the waste material to the glands is driven from the surface, and the waste material must find its way out of the system through some other organ, and in so doing overtaxes this organ and renders it liable to disease. This used-up or effete matter is also retained in the circulating fluid, the blood, longer than it should be, and consequently helps to vitiate the system and to

* Carpenter's "Physiology."

render it more liable to bowel and lung trouble, disordered digestion, and disease in general.

When the infant emerges from babyhood, at two and a half years, as it begins to run about and show off its pretty, attractive little ways, mothers are very apt to forget the importance of warmth and thorough protection of the body, and are led to indulge their fondness for pretty effects by dressing the little one too often in short socks, thereby leaving the legs exposed. From the second to the fifth year many children are very imperfectly protected. Let me urge all who have anything to do with children during this period, to see that the whole body is thoroughly protected. Long stockings should be worn throughout the whole year, and merino drawers and high-neck, long-sleeved under-shirts during the colder months of autumn, winter, and spring. The same care throughout the whole period of childhood is necessary for the foundation of vigorous health. Wool is a poor conductor of heat, and keeps the body warm by preserving about it the heat formed within. Linen and cotton, on the other hand, are good conductors of heat, and allow its rapid escape. When garments of wool are worn next to the skin, there is less susceptibility to the shock of any sudden atmospheric change, than

when linen or cotton is worn. There is also a greater equilibrium of the circulation and a more harmonious working of the inner organs. Woolen under-garments, moreover, stimulate the surface by friction, and assist by this means in maintaining a healthier condition of the skin, and prevent the too rapid cooling of the body when heated from physical exercise.

The receipt of the celebrated physician, Dr. John Hunter, for rearing healthy children, was "plenty of sleep, plenty of milk, and plenty of flannel."

The variability of the climate of the North Atlantic States calls for close attention to the protection of the body. The sudden alternation of heat and cold, which is characteristic of most of our climate, is a prolific cause of illness, which is not brought about through breathing the colder air—as many suppose—but is induced by the change of temperature from warmer to colder air, creating a sudden revulsion of the cutaneous circulation, and a consequent congestion of the internal organs. Anything, therefore, which will prevent this revulsion of the surface circulation will be instrumental in preserving health. In merino and other woolen underwear we have the best means for accomplishing this object.

If this thorough protection is enforced, there will be fewer cases of consumption and nerve depression in after-life. Through cold a shock is often given which, although not appreciated at the time, produces an effect later. Like the tender plant put out too early in the spring, and affected by the spring frost, it may still grow, but it is stunted and unproductive, or, if productive, its fruit is not so abundant or large as that from the plant which has received more protection in early life. The laws of growth and life are the same in the animal as in the vegetable kingdom.

The necessity of suitable clothing for the young has been very pointedly exemplified in the case of a little child, two and a half years of age, who has recently been under my care. During the summer, the child was the picture of health and beauty. Late in the autumn I was consulted by the mother, who was very anxious about her little daughter. I found the child thin and pale, her ears of a waxy color. She was peevish, wakeful at night, with small appetite, disordered digestion, bowels at times constipated and frequently much relaxed. She was dressed—but how? Her arms were covered with very thin stuff, feet clothed with short socks and slippers, while the legs were bare for two thirds of

their length. The only remedy prescribed was warm stockings long enough to cover the whole leg, merino drawers, and long-sleeved undershirt. The result was that, after the lapse of a month, the child's health and beauty were restored. This is not an uncommon experience. Many children are kept in a fretful condition, are pallid, with defective appetite and digestion, and thousands more are sent to their graves, all owing to the exposure of arms and legs indoors as well as out-of-doors during the spring, autumn, and winter. I could narrate case after case where health, happiness, and brightness have been restored by simply clothing the child in woolen under-garments, and protecting the feet with warm shoes. The danger to the system, resultant from imperfectly protected feet and legs, is greater than most mothers realize. The sole of the foot is freely supplied with an interlacing of blood-vessels, by means of which the whole systemic circulation can be chilled and affected if the foot is not amply protected. When the bottom of the foot has merely a thin piece of leather between it and the cold, damp ground, there must take place a revulsion of the circulation, the blood is driven back to the central organs, creating in them some disorder, and an increased duty is demanded of the nervous

system to keep up the proper equilibrium of the blood-current. The shoe, therefore, should be thick enough to protect the foot from cold and exclude the dampness. Every boy, and perhaps girl also, must, as the natural result of active play have, at times, wet feet—one of the unavoidable risks of childhood. It is important, however, to impress upon the child the necessity of quickly changing shoes and stockings when they become wet or damp.

The appearance of a child is too often the dominant thought, rather than that the manner of dressing it should be conducive to health. With its pretty white frock, short socks, and slippers, displaying its bare legs, the child is a pleasing picture for some mothers to look upon. When the doctor protests against all this, he is too often met with a frown, and the change is objected to. "The child looks so pretty with short socks and bare legs," is one of the stereotyped replies. The custom of baring the legs is one that has been handed down, and accepted by each generation of mothers as the proper manner of dressing, without considering the evil that may arise therefrom. When reminded of the danger, they advance the argument that "the child's legs become accustomed to the cold, and

do not feel it," or that "they wish to accustom the child to cold, and make him tough and hardy."

It must be remembered that there is a marked difference between the temperature near the floor, where the child may be playing, and of that several feet higher, where the parent is sitting or standing in comfort. Would the mother be willing to lie flat on the floor for any length of time? Would not the fear of taking cold prevent her from exposing her head to the draught on the floor? Yet the child's tender legs, if they are unprotected by long stockings, are exposed to the same draughts which she fears would give her a cold in the head. Many of the colds and little ailments of young children, the causes of which are such a mystery to the mother, who has been "so careful," are the result of taking cold while playing on the floor near the base-board of the room, or near the window, even though it be shut, or near the door, under which there is generally a space through which the air blows. A current of air blowing through a crack, or along one plane, as the current of air along the floor, is more dangerous to health than if one is in a colder air which is blowing equally about the body. It is well to bear in mind the wise old saying :

“If the wind strikes you through a hole,
Go count your beads and mind your soul.”

The impression that the effect of cold is shown chiefly in some disorder of the air-passages is so prevalent, that I wish to emphasize the fact that the lungs and the air-passages to the lungs are by no means as frequently or as seriously affected by chill to the surface of the body and to the extremities, as are the organs of digestion and the nervous system. The nervous system is prostrated, so to speak, in its effort to maintain the equilibrium of the circulation when disturbed by cold. A chill to the surface of the body is a most prolific cause of disorder of the digestion, arresting the function of the liver, and bringing about the accompanying symptoms of loss of appetite, diarrhœa, colic, and want of nutrition, all of which very frequently take place, without the child showing any of the effects of cold by sneezing or coughing.

The physiological effect of cold is the same, whether the individual experiences the sensation or not. The nerves of sensation at the surface of the skin may be blunted from habitual exposure just as the stomach of the drunkard may be tolerant of an enormous amount of alcoholic liquor; but does any one imagine that an excessive quantity of alcoholic

liquor taken into the stomach is not damaging to the system? One may have greater resistance to the effect of cold than another, but in the exercise of this resistance there is a waste of nerve energy and a loss of force which should be held in reserve to supply the demands that the system will make upon it in the time of illness.

In one's zeal that the child may be thoroughly protected from cold there is the possibility of erring on the other side, and that, by being too much and too heavily clad, a tenderness and delicacy of the body may be induced, with a liability to sudden colds from slight changes of temperature. A child of from two to four or five years of age, if in good health, is, I might say, never quiet during waking hours. Its ceaseless motion increases the naturally active circulation, and induces free perspiration. The clothing, therefore, should be of light but warm material, such as will permit the perspiration to evaporate freely without the danger of incurring a chill.

Suitable clothing for outdoor wear is also an important consideration, especially so for boys during the winter. "Young America" is prone to exercise a great deal of independence in dress. He imagines that the overcoat is an unnecessary article

of apparel, and that going without it is the means of gaining a tough and hardy constitution. The evils resulting from this idea are too frequently brought to the notice of the physician. I have frequently witnessed a great improvement in a boy's health, and known the tendency toward colds and snuffles to be broken up, after the boy has been compelled to wear an overcoat during the winter months. Persistent disuse of it is often the cause of catarrhal troubles, pallor of countenance, and the want of development of fat. It is equally important that girls should be clad with thick jackets and gowns.

The mother should satisfy herself that her daughter's clothing is not too tight about the waist. The effect of tight lacing is disastrous enough with fully developed women ; the results are far more serious with the child. At this period the lungs are naturally increasing in size in conformity with the development of the rest of the body, and their full power of expansion should be permitted, in order that sufficient oxygen may be taken into the system, and a due amount of waste material carried out through the lungs. The full exercise of the functions of the liver, stomach, and upper bowels is also necessary to healthy nutrition of the body. All

these duties are interfered with if the clothes are worn too tight about the waist. When corsets are worn at too early an age, or when laced too tightly, they press upon the lower ribs, compressing the base of the lungs, and prevent their full expansion. The liver and stomach are also compressed, their cell-life is interfered with, and the organs themselves become contracted. This retards the present as well as future development of health and strength, and constipation and uterine troubles, resulting from disturbance of the abdominal circulation and the downward pressure of the bowels, are among the probable evils.

The skirts and under-garments of young girls should be supported by shoulder-straps or skirt-supporters, in order to avoid undue pressure about the abdomen, and the downward pressure into the pelvis, that must occur when these garments are simply held in place by tight bands about the waist.

A grave mistake is frequently made in night-clothing of children. Even careful mothers, who appreciate the importance of woolen garments during the day, will often clothe the child at night in a simple cotton night-dress, without the woolen under-shirt. This is most inadvisable. During the sleeping-

hours the circulation is more feeble, and the vitality is lower. The skin requires, therefore, careful protection at this time, in order to maintain an equilibrium of the circulation. Linen shirts should be discarded during the fall, winter, and spring, and even during the summer when at the sea-shore, at which time the child should wear some kind of woolen under-shirt. Very young children may wear flannel or canton-flannel combination suits. The insensible perspiration which is constantly thrown off carries with it an amount of waste material which is rubbed off the skin and retained in the under-flannel or clothing. The under-garments worn during the day, therefore, should be changed at bedtime, so that this noxious matter may be destroyed or disinfected by exposure to the air. For the same reason, also, fresh under-clothing should be put on several times a week.

When we consider that about one third of an adult's life and nearly one half of a young child's life are passed in bed and sleep, the immediate surroundings of the individual during that time, are matters of no small consideration.

IMPORTANCE OF PURE AIR.

The importance of pure air and the great danger of foul air in the house, in its effects upon children, are not always fully appreciated. Pure air is as necessary as good food, for the oxygen in it is as distinctly an article of nutriment. Without the necessary supply of oxygen a sufficient number of blood-corpuscles can not be formed, and in consequence the healthy growth of tissue can not take place. When, therefore, the air taken into the lungs does not contain the full supply of oxygen, as in the case where there is defective ventilation, the system is deprived of due nutrition, a starvation of tissue is the result; development is retarded, and there is a lack of physical strength.

The sense of smell, and the effect that the air has upon the ease of breathing and general comfort, are as a rule sufficient guides as to its purity. With many individuals, however, this can not be relied upon, for their faculty of detecting an impure atmosphere is blunted, from their breathing it so continuously. If upon entering a house or a room there is the slightest odor perceptible, one may feel assured that there is insufficient ventilation and that

the air is vitiated, and therefore detrimental to health.

The sources of air pollution or vitiation in the house are defective plumbing, burning of gas, the gas given off from defective furnaces and stoves, cellars that are damp or that contain rotted wood or undue amount of vegetable matter, exhalations from the body and lungs, and lastly house filth. The unsanitary condition of the house, permitting foul odors from the drains or water-closet to contaminate the air the child breathes, will devitalize the system, poison the nerve-centers, and exercise a baneful effect upon the growth and health. If the air is loaded with decomposing material from drains, or is vitiated by want of proper ventilation, the child will display all the symptoms manifested by children who have poor food and an insufficient amount of sleep; such as pallor of countenance, headache, loss of appetite, want of energy, and general depression. Breathing impure air is also a prolific cause of catarrhal colds and sore throats; it predisposes a child to tonsillitis, bronchitis, and pneumonia; and as a result of lowered vitality there is less power of resistance to the contagious diseases, such as scarlet fever, diphtheria, etc. The air of the nursery or bedroom is frequently ren-

dered unwholesome by burning too much gas. It must be borne in mind that one ordinary gas-burner consumes as much oxygen or vitiates as much air as five people; so that, if the gas has been burning for any length of time in a sleeping-room, fresh air from out of doors should be admitted before retiring for the night. So, too, fresh air should always be admitted when the nursery has been used as a sitting-room or a play-room during the afternoon, for the atmosphere becomes polluted by the exhalations from the lungs.

The used-up material thrown out of the system through the lungs and from the surface of the body, and which consists chiefly of carbonic acid gas and organic matter, is a constant source of air pollution. The carbonic-acid gas was formerly considered to be the most dangerous of air impurities, but we now know that the organic matter carried out with the breath and with the perspiration is far more deleterious. This product is an actual poison of a virulent character, as has been shown by the investigations of Prof. Brown-Séquard. In condensing the watery vapor coming from the human lungs he obtained a poisonous liquid capable of producing almost immediate death. He injected the liquid under the skin of a rabbit, and the effect was speedily fatal.

When the organic poison coming out of the lungs is rebreathed, the individual is subjected to a process of slow poison, which, although not fatal, is steadily undermining the functions of life.

This organic matter does not long remain in suspension in the air of the room ; its weight causes a large portion to settle upon the floor and furniture, and a certain amount adheres to the walls. The accumulations of these solid exhalations from the lungs and skin, that must necessarily take place in a room or house where there is insufficient cleanliness or imperfect ventilation, constitute a great part of house pollution, or, as I have elsewhere termed it, "house filth," and give rise to that peculiar stuffy, disagreeable smell so noticeable in some houses.

Investigation shows that from this organic matter are developed minute organisms or low forms of fungoid life, and that the number of these organisms will vary according to the amount of this house filth. It has also been demonstrated that the state of health of the inmates of the house largely depends upon the number of these micro-organisms, and that in times of epidemics a greater percentage of deaths occurs in houses where there is a greater amount of this foul air. The term "house filth" is perhaps an objectionable one to many, who are not

aware of the existence of this organic matter, or who do not realize the danger that arises from its settling upon the furniture, from its being retained in mattresses that are seldom picked over or cleaned, from its mingling with the dust accumulated behind and under the furniture, and from remaining on the carelessly swept or unwashed floors. Dirty carpets become receptacles of organic matter and hot-beds for breeding the low organisms. These micro-organisms, when taken into the lungs, devitalize the system, and are one of the great causes of lowered vitality, inducing the symptoms already enumerated. Careless housekeepers are generators of unhealthy households.

The only way to remove and to keep away this organic deposit, which exists wherever human beings dwell, is by great cleanliness, frequent scrubbing, wiping down the walls, vigorous sweeping, shaking the carpets, dusting, and the free admission, winter and summer, of the outside air.

The healthfulness of the nursery is greatly promoted by hard-wood floors, covered with rugs, which may be taken up frequently and shaken. Thorough cleanliness, therefore, as well as ventilation, is necessary to maintain in the house pure air which is imperative for every child to breathe. It

would seem almost unnecessary to speak of the importance of opening the windows of the bedroom in the morning, but experience proves that it is often neglected during the winter months, even in households where fair attention is paid to the laws of health. The windows of an occupied bedroom should be left wide open for a time every morning, and the bedclothes thoroughly exposed to the fresh air. The impurities in the air are not as quickly appreciated when the air is cold as when it is moderately warm, and, owing to this, a cold room is very apt to escape perfect ventilation.

The night ventilation of the child's bedroom is often difficult to accomplish satisfactorily without creating a draught. Yet it is a matter of great import, when we consider that nearly one half of the life of a young child is spent in bed. The widespread delusion that a child should sleep in a cold room, and that the windows should be widely open, is productive of great harm. If the room is too cold, an extra amount of bedclothing is necessary. This additional covering, by preventing evaporation, retains about the body the exhalations from the skin, and the heavy clothing tends to impede free breathing as well as to prevent such a peaceful and restful sleep as when the covering is light. If the

covering is too thick, the child after falling asleep is very apt to break out into a perspiration. This creates a restlessness, the bedclothes are partially thrown off, exposing the surface of the body to the cold night air, and to the risk of those evils to which I have already alluded when children are too thinly clad. In heavy sleep the sensation of cold is not experienced, but the injurious effects follow nevertheless. The temperature of the room, therefore, should not be cold enough to necessitate heavy covering. Cotton sheets and light blankets are the only covering suitable for a child at night. Comforters of down or cotton do not permit the ready evaporation of the insensible perspiration, and are not, therefore, as healthful as blankets. During very cold weather it is desirable to ventilate the bedroom at night through another room, or by means of a door leading into the hall, where a window may be left open, so that the air may be tempered before reaching the room. During moderate weather the bedroom window may be left open a short distance from the top. Some means should always be provided for the exit of foul and the entrance of pure air.

It is impossible to prescribe the details of ventilation for the bedroom, for the directions must natu-

rally vary according to the size and position of the room and the condition of the atmospheric temperature. While calling attention to the very great importance of pure air in the bedroom, I only desire to emphasize the danger of too cold a room. I am aware that some physicians advocate sleeping in very cold rooms. I fail, however, to see the necessity or reason, from a hygienic standpoint, for so doing. If toughening the child is the motive, it is certainly a mistaken one; if fresh air is the object, this should be accomplished if possible without lowering the temperature too much. The temperature in the sleeping-room of a child over three years of age, evincing no sign of lung trouble, should be between 50° and 60° Fahr. With this degree of temperature, pure air in the room, and not too heavy bed-covering, the sleeper will awaken in the morning, after a restful sleep, without any injury to health.

Many devices are resorted to for allowing fresh air to enter through a window without creating a draught; only two of which, on account of the ease of application and efficacy, I will mention.

The one I would especially recommend is as follows: A frame should be made about twelve inches high, and of a width sufficient to fit in the window-

frame ; on this should be tacked coarse muslin, or, if preferred, loosely woven colored cloth. The upper sash is then lowered sufficiently to insert the prepared frame at the top. This device is largely used in hospitals, and permits fresh air to come in without creating a draught, and also excludes the dust.

The other method recommended is the placing a strip of wood six inches broad under the whole length of the lower sash, which, by being raised, permits a current of air to enter between it and the upper sash, and, when the window-shade is raised, directs the current upward toward the ceiling and lessens the danger of air blowing upon those who may be in the room.

An open fireplace, even without a fire, is a great aid in promoting good ventilation, and is desirable to have in every bed-room. Where the sleeping-room is small, without a fireplace, it is impossible to secure pure air in it throughout the night unless a window or door is open. If the choice lies between having the bedroom air of moderate temperature rendered impure by bad ventilation, and cold with good ventilation, it is far better to have the air cold and pure, and covering the sleeper with the objectionable heavy clothing.

The sudden and great change, after breathing during the day the overheated air that is found in most houses, to the very cold air inhaled at night while sleeping, when the circulation and vitality are lowered, induces a catarrhal condition or a congestion of the mucous surfaces of the air-passages.

When the seat of this catarrh is in the mucous membrane of the nose, free respiration through the nose is interfered with, and as a result the child is compelled to breathe through the mouth. I wish here to urge the great importance of breathing through the nose rather than through the mouth. The configuration of the inner portion of the nose is such that a large amount of mucous surface is exposed. This warms the air passing over it, and protects the pulmonary circulation from the shock that occurs when cold air is breathed directly into the lungs through the mouth. The mucous membrane covering the irregular turbinated bones in the nose performs another important duty: it collects and retains on its moist surface a large amount of the organic and inorganic matter floating in the air, and thus prevents this material finding entrance into the lungs, where its presence is a source of irritation. Moreover, the air in its passage through the nose absorbs more or less moisture, and is thereby ren-

dered more acceptable and less irritating to the pulmonary organs. Thus we see that the nose performs a threefold office, viz., filtering by removing floating particles, warming the air, and giving moisture to the air. It acts as a vestibule does to a house, preventing a sudden rush of cold, dirty air into the more refined apartments within.

Understanding now the important duties performed by the nose, the injurious consequences that take place when there is a hindrance to the full accomplishment of its functions can be set forth. In order that a sufficient amount of air may enter the lungs for the purpose of purifying the blood, the caliber of the passage through which the air passes in must be of proper dimensions, consequently it is highly important that there should be no thickening of the nasal mucous membrane to diminish the caliber of the nasal passage. If the child breathes through the nose with a contracted passage, less oxygen can find entrance to the lungs than Nature intended, and there results an imperfect purification of the blood. A retention of the impurities affects the general health, in the same manner as already spoken of when impure air is breathed. When the air is taken in through the mouth, its low temperature, insufficiently supplied with moisture, and hold-

ing in suspension an amount of organic and inorganic matter, has more or less damaging influence upon the pharynx or back part of the mouth and the lungs. The mucous surface of this portion of the breathing apparatus is not intended to withstand the harsh influences of the direct air, and, when this takes place, there results an unhealthy or catarrhal condition of some portion of the mucous membrane, and the individual is predisposed to acute or chronic pharyngitis, laryngitis, bronchitis, pulmonary congestion, and more readily falls a victim to consumption. A mouth-breather is rarely a strong, healthy being. Mouth-breathing often becomes a habit, perhaps started by an influenzal cold, and can be overcome in many instances when there is no hypertrophy of the mucous surface, by constantly calling the attention of the child to breathing through the nose. One of the chief causes for inducing the habit of mouth-breathing, aside from that directly caused by thickened mucous membrane of the nose, is the impure, overheated house air.

The North American Indians have so clearly appreciated in a practical way the benefits of breathing through the nose, that they early habituate their children to its practice. The Indian

woman watches with care the manner of breathing of her offspring. If the mouth is open, she will gently close the lips, and when necessary even bandage them in order to compel breathing through the nose. If we, as a civilized people, would but enforce the practice of the Indians, and take the pains to cultivate this habit with our children, guarding them from everything which may develop nasal catarrh, an important factor would be contributed to the more perfect development of our offspring.

The child reared under the conditions imposed by our modern manner of living becomes a more sensitive creature and is more easily affected by atmospheric changes and cold air; consequently, he can not, while asleep, breathe with impunity the cold night air, as can the Indian child, who has an inherited vigor, and leads a mere animal existence. Civilization and refinement, while bringing comfort and pleasure to body and mind, at the same time impose certain penalties, and necessitate a much stricter observance of the laws of health.

The benefits to health, accruing from free ventilation and pure air, are constantly exemplified in cases where animals are herded together. Statistics from the stables of the French army show

a reduction of mortality among horses of from one hundred and eighty per thousand horses to twenty per thousand after free ventilation had been introduced.* The same ratio of increased health has also been shown in factories and workshops where free ventilation and cleanliness are enforced. Dr. Parkes gives another remarkable instance illustrating the benefit of good ventilation. He mentions the fact that in the badly ventilated prison of Leopoldstadt, Vienna, 51·4 per thousand prisoners died from consumption; while in the well-ventilated house of correction, in the same city, the mortality from the same disease was 7·9 per thousand. This statement should arrest the attention of those in whom there is any hereditary tendency toward pulmonary trouble, and impress upon them the great necessity of having good house ventilation.

To preserve the purity of air in the household, four requirements must be fulfilled: First, the admission of fresh air from out-of-doors, to take the place of the air which is constantly being vitiated wherever animal life exists. Second, through cleanliness, to remove from the furniture and floors the

* "Manual of Practical Hygiene," by E. A. Parkes, M. D., W. Wood & Co., vol. I, p. 146.

organic matter which is constantly thrown off from the lungs and skin. Third, frequent inspection of plumbing. Fourth, a cellar free from all dampness, rotting wood, and everything that may be in a state of decomposition. We might add another requisite, viz., to see that stoves and furnaces do not discharge that most dangerous product of combustion, carbonic-oxide gas, into the rooms. If there is a crack in the furnace, or the stove-damper is turned off too much, this gas is discharged into the house, and exerts a most pernicious effect upon all who breathe it.

Having already commented on the importance of the admission of fresh air, and cleanliness, I will briefly allude to the other requirements.

The plumbing of a house should be so located that it can be thoroughly inspected without disturbing the plaster and wood-work, and it is certainly advisable to have it inspected every few years. Sewer-gas has a corroding effect upon lead, so that a lead pipe that is sound one year may be perforated with holes a year later. In modern plumbing very little lead pipe is used, but there are small sections of this pipe employed in the average house. It is a great mistake to rely upon the sense of smell, in detecting the presence of cracks and openings into

soil-pipes, for some of the most dangerous emanations from these pipes are scarcely perceptible by their odor. The micro-organisms, arising from the decomposing organic matter adhering to the interior walls of the pipe, are not particularly offensive, and yet they are more dangerous in their effect upon the human system than the sewer-gases. The germs of typhoid fever, scarlet fever, diphtheria, and other contagious diseases, may find entrance into the house through a crack or fissure in the pipe that allows the entrance of sewer-gas.

The fourth indispensable condition to be observed—i. e., that cellar air be free from dampness and germs of decomposition—is one that is not generally understood or appreciated, even by those who have a fair knowledge of sanitary matters. During the cold weather, when the doors and windows are closed, the air from the lower floors and cellar is drawn upward, by the current of heated air above. This assertion may be verified by pouring on the cellar floor a small quantity of oil of peppermint, when the odor will be detected in a few minutes throughout the house. Wherever the presence of the peppermint is detected, there impure cellar air, if such exist, will find entrance.

To maintain pure air in the cellar, it must be

free from all dampness, free from all rotted wood, and from all material which is undergoing decomposition. Wherever there is confined dampness, there will be found low forms of vegetable molds, which, although perhaps not visible to the naked eye, are easily shown to exist by the aid of the microscope. These low vegetable organisms, drawn by the heated air of the house to the upper floors, and inhaled by the inmates, are a prolific cause of the general *malaise* and lowered vitality that so many suffer from while living in houses with unsanitary and especially damp cellars. They also give rise to illnesses simulating malaria, and cause quinine to be used so freely in many households. Sore throats, bronchial troubles, and a condition of the system calling for tonics, are also of frequent occurrence in houses with damp cellars. Let me urge all those in whose families there is a taint of consumption to be especially watchful that the cellar is free from all dampness, for it has been definitely proved that the death rate from consumption is greatly diminished if the subsoil under and about the house is perfectly dry. In a report of an investigation of drainage of one hundred and twenty-eight towns in Massachusetts, Dr. Windsor remarks, in regard to the influence of a damp soil upon the health of persons

living over it, that "the class of diseases most frequently noted in connection with damp cellars are inflammatory diseases of the respiratory organs, especially bronchitis. Next in order of frequency comes rheumatism, more particularly of the sub-acute order. Phthisis, pneumonia, and wasting chronic perversions of digestion, are also found by many of our correspondents to be common in houses with such cellars; also a lessened power of resistance to all diseases when contracted. No observer can doubt that a large amount of preventible disease is caused by damp cellars." *

Every parent should realize the vital importance of pure air for a growing child, and should endeavor to keep the air in the dwelling as pure as possible, especially as it is not a difficult object to secure. It only necessitates careful and intelligent supervision of the requirements mentioned, and, when these are observed, the reward will be apparent in the increased vigor and health of the child.

* "Seventh Annual Report of the Massachusetts Board of Health," p. 227.

EXERCISE.

A full amount of exercise in the open air is one of Nature's requirements for healthy development and for the maintenance of a good state of health. Every child, therefore, should have several hours set apart daily for this purpose, that its energy may find free vent in all outdoor sports. Instinct leads a child to run, climb, jump, and freely use the voice. All this strengthens the muscles and ligaments, enlarges the breadth of the chest, improves the digestion, sharpens the appetite, and keeps the functions of the body in a healthy condition; it increases the activity of the circulation, thereby promoting the exhalations from the skin and lungs, thus eliminating from the system the used-up or waste material floating in the blood, and rendering the mind more active. When the weather is inclement, the recreation and play should be indoors, but out-of-doors when the weather permits; for, added to the exercise, the child not only breathes pure air, but derives benefit from the life-giving power of sunshine. The misshapen, narrow, and flat chest so often found among residents of cities is largely the result of insufficient exercise of the arms and chest during early youth. This narrowing of

the chest reduces space for the lungs, and interferes with their full development. With small or imperfectly developed lungs the working of the whole organism is affected, for it is through the lungs that oxygen, which is so necessary for the proper transformation of food into nutriment, finds entrance, and here also that a large portion of the waste material is thrown off. It is impossible, therefore, to enjoy perfect health while so important an organ is compressed. One is more apt to fall a victim to phthisis and acute pulmonary diseases when the lungs are cramped.

During the period of youth very much can be done to guard against a contracted chest, by the daily exercise of the arms, avoiding a stooping posture while sitting or walking, and by wearing loose and easy clothing, so that there can be no compression of the chest-walls.

Light calisthenics, now practiced in many Kindergarten schools, are an invaluable aid in assisting the development of the chest. If the same plan of combining physical and mental training could be carried on throughout the whole school-life it would be productive of an incalculable amount of good for many children, especially those who are delicate and those of a more studious turn of mind, who obtain

very little exercise except that received in walking to and from school.

All games calling for the use of the arms should be encouraged. The hoop, battledore and shuttlecock, bean-bags, ball-playing for boys, and the parallel bar for older children, all tend to develop the chest, and can be used during the winter as well as the summer. The use of the skipping-rope, in moderation, may be permitted for little girls, but should be forbidden as they approach the years of puberty. During the summer months, lawn tennis affords admirable exercise, and is most beneficial for girls. It calls them out into the fresh air, brings into play all the muscles of the arms, loins, and legs, and develops the chest. The game has sometimes been condemned for girls—unjustly so, it seems to me. Because some few, who have more spirit than common sense and physical strength, have played to excess and thereby injured themselves, the game should not be condemned, any more than riding or any other exercise. When played in moderation, under certain restrictions, it is most valuable as an aid to muscular development. All clothing worn while playing this game should be light and loose, especially the corsets, which should have few bones, and should yield readily to any movement of the

body. The game should never be played at any time during the period of menstruation. My experience has shown that, when any harmful results have followed from the game, there have been indications of previous pelvic irritation, or the game has been played during menstruation, or while wearing tight corsets, or while the health has been poor. Certainly, the benefits derived from the game counterbalance a hundred-fold the harm.

With children who are delicate by inheritance, special attention should be paid to the development of the chest. Their muscular tissues being feeble and the bony framework abnormally soft, there is great danger that the chest-walls may be bent forward, causing a compression of the thoracic cavity. These children should be encouraged in the exercise of all the youthful sports, care being taken naturally that they do not overtax their strength. In running and playing the lungs are more fully inflated, thus helping to increase their size. A greater quantity of the oxygen of the air enters the circulation, and a larger amount of waste matter is thrown off.

The dainty little creature who is praised for acting "like a little gentleman" or "a little lady," who is reproved for a particle of dirt on its clothing, and compelled to walk demurely, taking hold of the at-

tendant's hand, is generally a subject for rhubarb and soda, calomel, ipecac, iron, and other drugs whose use becomes necessary to keep the liver, lungs, and bowels in good condition, thus supplanting Nature's medicine, exercise, by the concoctions of the apothecary.

An inactive, indoor life for the young lowers the vitality, retards the full development of the muscles, induces a softness and delicacy of all the tissues, and lessens the power of resisting cold and diseases of all kinds.

Housing children during the winter weather, as a precaution against their taking cold, is a very great mistake. Very few colds are contracted in the open air, if the feet, limbs, and body are sufficiently protected in the manner already indicated, and if the children are permitted to follow out their own inclinations of running, skipping, and having free motion of the arms, *and are not exposed for too long a time to the cold.* When, however, they are compelled to walk like "little gentlemen and ladies," even when bundled in furs, the body soon becomes chilled if the weather is very cold, and some disturbance of the system follows. Children should be accustomed to daily exercise in the open air in all weathers, unless, of course, it is very stormy or the

cold is severe, and even when delicate they should not be deprived of the tonic effect of outdoor air, and of strengthening the muscles by exercise in it. The first effect of cold air upon the system is a tonic, as may be seen by the bright color on the cheeks, and a feeling of exhilaration after a walk on a crisp day in autumn. Prolonged exposure to cold, on the other hand, is very depressing; delicate children, therefore, should not remain too long out-of-doors if the weather is severe, or if it is very windy; for high winds, if cool, rapidly abstract the animal heat, and are also depressing. If a child is chilled or cold, it should instantly be brought into the house to be warmed and sent out again, taking the fresh air and outdoor exercise in installments, as it were, instead of all at once. Never permit a child to remain out-of-doors when crying from cold.

Children will frequently complain of pain in the legs and arms, which prevents them from exercising sufficiently. Their parents are often at a loss to determine the extent and true character of the pain, its transient nature deceiving and often leading them to doubt its existence, thereby causing much unnecessary suffering, owing to a misconception of the cause; and, when the pain is admitted, it is looked upon as a necessary accompaniment of child-

hood. These so-called "growing pains"—a misnomer—are caused either by fatigue of the muscles—the result of over-exertion—or by some strain upon the tender articular surfaces, or are brought about by cold, inducing a species of muscular rheumatism. Children of sedentary habits, who are not protected sufficiently by flannels, and also those of delicate organization possessing more energy than vigor, are the chief sufferers from these pains. In every case, however, these pains can and should be promptly relieved, in the one instance by warmer clothing, in the other by carefully guarding against too violent and prolonged exercise.

The brightest and sunniest room in the house should be given to the children for their play-room; this is especially necessary during the winter months, when they can not spend many hours out-of-doors. Sunlight is as essential to the health of children as it is to plants. One who has attempted to grow plants in the house in winter full well knows the importance of placing them where the sun can shine upon them. Children living in sunless rooms are not only injured physically, but are apt to become fretful and irritable, while sunlight generally brings brightness and contentment.

I wish here to protest against that pernicious habit of attempting to “toughen” a child by means of light clothing, by cold sleeping-rooms in winter, bathing in too cold water, and other harmful processes, that mistaken mothers adopt in the hardening of their children. Do not be guided by enthusiasts on the subject of cold, but profit by the advice of physicians, whose study and experience enable them to give proper advice in this matter. The only way to harden a child—by which is meant rendering him less susceptible to the effect of cold, and giving him strength and vigor of body—is by rigid adherence to the laws of health; that is, providing a sufficient amount of clothing, plenty of outdoor exercise, pure air to breathe, simple and good food, with ample amount of sleep. I have in mind two school companions, who were naturally delicate, and wished to harden themselves, that they might do as other boys. The result of their hardening, which consisted in discarding overcoats, sleeping with windows wide open in winter, and other foolish habits, was that they died from consumption in early manhood. This is the fate that befalls many. Do not suppose that all children can be brought up under the same rules. Judgment and common sense must be brought to bear in deciding upon

questions of dress and of exercise in individual cases. Cast-iron rules will not apply.

SLEEP.

Dr. Hammond, in his valuable treatise on "Sleep and its Derangements," says: "The state of general repose which accompanies sleep is of especial value to the organism in allowing the nutrition of the nervous tissues to go on at a greater rate than its destructive metamorphosis. The same effect is, of course, produced upon the other structures of the body, but, as regards them, this is not of so much importance, for while we are awake they all obtain a not inconsiderable amount of rest. Even those actions which are most continuous, such as respiration and pulsation of the heart, have distinct periods of suspension. Thus, after the contraction and dilation of the auricles and ventricles of the heart, there is an interval during which the organ is at rest. This amounts to one fourth of the time requisite to make one pulsation and begin another. During six hours of the twenty-four the heart is, therefore, in a state of complete repose. If we divide the respiratory act into three equal parts, one will be occupied in inspiration, one in expiration, and the other by a period of quiescence. During

eight hours of the day, therefore, the muscles of respiration and the lungs are inactive. And so with the several glands. Each has its time for rest. And of the voluntary muscles, none—even during our most untiring waking moments—are kept in continued action. . . .

“But for the brain there is no rest except during sleep. So long as an individual is awake, there is not a single second of his life during which his brain is altogether inactive. . . . Its substance is consumed by every thought, by every action of the will, by every sound that is heard, by every object that is seen, by every substance that is touched, by every odor that is smelled, by every painful or pleasurable sensation; and so each instant of our lives witnesses the decay of some portion of its mass, and the formation of new material to take its place. . . .

“The necessity for sleep is due to the fact that during our waking moments the formation of the new substance does not go on as rapidly as the decay of the old. The state of comparative repose which attends upon this condition allows the balance to be restored, and hence the feeling of freshness and rejuvenation we experience after a sound and healthy sleep.”

The necessity of sleep during childhood is vastly greater than during adult life, for during the former period there is a proportionately greater destruction of nerve-tissue, as the result of the ceaseless activity of the child ; and longer duration of sleep is requisite, to allow time for the reparation of the substance destroyed, and the addition of new matter for the growth and development of the brain and nervous organization. The child of six or seven years of age requires at least eleven or twelve hours night sleep, and should be in bed by half-past 6 or 7 P. M. The duration of sleep after the seventh year may be gradually diminished up to the period of puberty, when nine or ten hours will be sufficient. A nap in the middle of the day is desirable for all young children, and quite important for a child under four years of age. It gives the nervous system a rest, and makes a break in the nerve excitability that always exists at an early age. If the noon nap is not prolonged over an hour or an hour and a half, it will rarely have any effect upon the duration of the night sleep ; on the contrary, it will frequently be the means of aiding good sleep at this time, by checking that excitability of the brain which so often prevents children from quickly falling asleep after retiring.

The symptoms resulting from too little sleep are

nervous irritability, restlessness, loss of flesh, and a delicacy of digestion. Many will exhibit a dullness, pallor of the face, and a disinclination to play. When from any circumstances a child has acquired the habit of lying awake for a long time after going to bed, a full warm bath, or even a warm foot-bath, given just before retiring, will be of benefit. The suggestions to be mentioned hereafter regarding the avoidance of mental work or excitement after supper, all of which will prevent undue brain activity, and soon restore the habit of quiet, restful sleep, should also be noted.

In the era in which we live, the necessity of plenty of sleep for the youthful brain is of vital importance. The parents of many of the present generation of children are of an exceedingly nervous temperament, and we naturally look for a highly wrought nervous organization in their offspring. For this class especially, and for those in whose family there is consumption, or a tendency toward delicacy of the body, it becomes a matter of the highest importance that the child should have an ample amount of sleep; when this requirement is not fulfilled, there is far greater likelihood of the development of the hereditary disease, while there is less resistance to illness of all kinds.

Abundance of sleep is very essential during the maturing years, to enable the nervous system to acquire firmness and vigor. Insufficient amount of sleep often results in smallness of stature or stunted growth, and in insanity in later years. I have said that the nerve system needs a certain amount of rest, in order to direct the building up and the repairing of wastes. If this full amount of rest is not obtained, the building-up process is likely to be interfered with, or, if the nerve-force is successful in both building up and repairing the wastes, it is apt to suffer a collapse in after-years, like the boiler in a factory, that may be of service for many years, under a reasonable amount of work, but which, when run under high pressure, with roaring fires, very soon gives out, and explosion ensues.

The hour immediately preceding bedtime should be spent quietly, in order to relieve the nervous system from all excitement. Romping and excited play that young children frequently indulge in, and the exciting tales of fiction that older children pore over just before the hour of bedtime, are very detrimental and should never be permitted. They stimulate the circulation of the brain, and very frequently cause dreams, "night terrors," restlessness, disturbed and insufficient sleep. Children may amuse themselves

with light games, knitting, and crochet, or they may be read aloud to, provided the book is not exciting, but anything bordering on excitement or brain-work should be avoided. With the dreamer, the nervous system does not obtain its proper rest, though the body is asleep, for there is as much expenditure of nerve-force during the moments or hours of dreaming as there would be if the child were awake and undergoing the same mental thoughts and excitement. Therefore, it is of the greatest importance, in order that the full nerve-rest may be obtained during the sleeping hours, so to conduct the child's general hygiene that the dreams do not occur. Frightening stories told by nurses, with the idea of enforcing obedience, are frequently the direct cause of the night's terrors and dreams of childhood.

I have already reminded the reader of the fact that one half to one third of a child's life is spent in bed, and have incidentally alluded to the great importance of the individual surroundings during this period. It is perhaps wise, in considering this section, to give a *résumé* of the conditions favorable to a healthy sleep. These may be briefly stated as follows: The bedroom should be well ventilated, in order to maintain pure air, which should not be

overheated or too cold; the personal clothing should be loose and free, to permit good circulation; the bed-covering should not be too warm nor too heavy, for heavy covering embarrasses respiration and creates restlessness; the sleeper should breathe through the nose, and keep the mouth shut; indigestible food should be avoided late in the day; those who are not strong will sleep better by taking some light, digestible food just at bedtime; there should be an avoidance of mental excitement or activity during the hour preceding that of retiring.

REGULARITY OF THE BOWELS.

The removal from the system of used-up or waste material is accomplished through four channels, viz., the lungs, the skin, the bowels, and the kidneys; and for the preservation of health it is of the highest importance that all these means of exit should be kept in perfect condition. If any one of these excretory organs fails to do its share of elimination, its duty must fall upon the others, in which case they are overtaxed, and in turn are disturbed in their functions. At the same time the noxious matter, which should pass out, is retained in the system too long, producing self-poisoning.

The elimination from the lungs and kidneys generally takes place in a healthy manner during childhood; on the other hand, there is a liability to imperfect performance of the duty required of the bowels and skin, and of fostering a chronic, morbid condition of these channels of elimination. Many parents and nurses are not aware of the misery and discomfort, to say nothing of ill health, that they are responsible for, by neglecting to impress upon the child the extreme necessity of a daily action from the bowels. The statement of a young child should not be relied upon, but it should be the duty of the mother or nurse to see that the act is daily accomplished. The child, having grown older and having reached the period of school-life, is very apt to hasten out to play or to school, and to neglect the call of Nature. If Nature's calls are frequently neglected, she will after a while cease to convey to the brain the impression that the bowels should be evacuated, and we are then forced to give a stimulant or excitant, in the form of medicine, to insure an action.

Aside from the neglect above mentioned, the causes which bring about constipation are, either insufficient amount of vegetable and coarse farinaceous food, a defective nerve-force, or general phys-

ical weakness, with deficiency of intestinal secretion, want of daily exercise, or intestinal catarrh. In the effort to establish regularity, the immediate cause of the constipation should be ascertained, and the defect remedied, in preference to placing dependence on medicine. Reliance upon medicines or injections should be carefully guarded against, for, if the habit be once formed, there is great likelihood of its being continued throughout life. Constipation with young children is often due to a mild intestinal catarrh, which is induced by the impression of cold upon the surface of the body consequent upon scanty clothing and bare legs. The slimy mucus which is excreted in this catarrhal state covers the feculent material and thereby diminishes the natural stimulation of the peristaltic action, and favors an accumulation of the fæces. The remedy for constipation from this cause is to be found in extra warmth and protection to the body.

Neglect in establishing regular daily action of the bowels leads to great discomfort in after-life; aside from this, there is a vitiation of the system, a self-poisoning, an absorption into the blood of the gases and other obnoxious matters. Headache, lassitude, impairment of memory resulting from poisoning of the nervous system, indigestion, muddy

complexion, pimples, and bad breath, all follow. The child becomes dull or stupid, and is then punished most unjustly for a mental condition arising from the inattention of others to his physical condition. Constipation is a prolific cause of dyspepsia and the attendant evils to which the child will be subjected until regularity of the bowels is established. Not only should the habit of evacuating the bowels at a definite time of the day be taught, but a sufficient time should be allowed to permit the complete accomplishment of the movement, for, when there is a torpid condition of the bowels, too frequently the child does not remain seated long enough to force downward the feculent matter; and, becoming impatient at the delay, he hastens out without accomplishing the act, thus increasing the constipated habit and creating a call for medicine.

The peristaltic action of the intestine is stimulated by food containing a good deal of cellular structure or waste material, such as rye bread and oatmeal, also fruit of an acid nature. Baked apples or stewed fruit, also prunes, are excellent at the last meal of the day. When fresh ripe fruit can not be obtained, an orange or scraped apple during the day promotes the intestinal secretions and action from the bowels, and can be given to the youngest child.

Much benefit is derived from deep kneading of the bowels, especially on the left side. In some instances it is necessary to resort to medicines ; in such cases guidance should be sought from the physician.

CARE OF THE SKIN.

I have already alluded to the necessity of protecting the skin from exposure to cold or from a sudden chill, in order that its important function of eliminating from the body its share of waste material may not be interfered with. I have stated that, when this duty is interfered with, the refuse matter is retained in the system longer than necessary, a self-poisoning is produced, and, in passing out through the other channels of elimination, the lungs, the bowels, and the kidneys, these organs become overtaxed and irritated, causing a predisposition to disease. It is evidently, therefore, of the highest importance that the skin should be kept in as perfect a condition of health as possible. To this end two conditions must be fulfilled : its circulation must be maintained in an active condition by sufficient clothing, and the unwholesome material which is constantly thrown out, through millions of glands in the skin, must be removed by frequent

bathing and friction. The danger was startlingly demonstrated of interfering with the eliminative function of the skin, and a signal proof of the important part which it plays in the maintenance of health was afforded, in the well-known instance of the "gilded boy," at one of the carnivals in Florence during the fifteenth century. The unfortunate child, in order to represent the dawn of the golden age, was covered from head to foot with gold foil. This covering completely closed the openings of the excretory glands of the skin, and caused a retention of the refuse matter which should have passed out. The result was the child's death within two days.

When the skin is rendered inactive, through insufficient covering, an injurious effect upon the system follows, differing only in degree, as in the case of the "gilded boy." As the life of the gilded boy was sacrificed to the desire for show, so many mothers, through their desire to beautify their infants and children, by dressing them in short socks, with arms thinly covered, and often without flannels, are as surely impairing their health, if not actually and slowly putting their offspring to death by a fatal disregard of the law of health that requires full activity of the glands of the skin.

Stereotyped rules of guiding the life of a child from infancy to maturity cause many a little one to fall by the wayside. While certain fixed principles for guidance may be established, the minutiae must vary according to age, temperament, and vigor of health. This statement applies with especial force to the bath. Judgment and common sense must be exercised in this apparently simple duty, for one child may be benefited by a method of bathing that would exert a positively injurious effect upon another.

Among the ignorant, filth of person is as common as the filth of their habitations, and ability to bring about reform in either case is almost a hopeless task. On the other hand, among the intelligent, the neglect of free ablution is not great; but there is danger, however, in its abuse. Like all good things the bath is often a powerful agent for evil as well as for good. Unless used intelligently, both warm and cold baths may exert a beneficial or detrimental effect upon the system, according to the method and frequency of giving them, and the condition of the child.

The warm bath benefits by directly stimulating the cutaneous circulation, and increasing the activity of the perspiratory glands. Calling the circulation

to the surface necessarily diminishes the supply to the internal organs, and consequently affects the activity of their secretions. If too long a time is occupied in giving the bath, or it is too frequent, general lassitude is very apt to ensue.

The immediate effect of cold water upon the skin is to drive the circulation to the inner organs of the body ; then, by its impression upon the nerve-centers, there takes place the excitement of reaction, which soon restores the superficial circulation in redoubled force, as is shown by the ruddy appearance and glow of the surface. If the circulation is sluggish, the nervous force weak, or the power of reaction feeble, then the cold to the surface has a contrary effect, and does an immense amount of evil, for the internal organs remain congested, and there results an impairment of their functions. If after a cold bath the skin remains pallid, the fingers blue and cold, it indicates that the reaction is incomplete, and that the effects are injurious ; or if, after reaction has taken place, there follow sensations of languor, headache, chilliness, or general weariness, it indicates that the cold bath is doing a positive harm and is too depressing ; in both of these cases bathing in tepid water should be substituted.

During the winter months a bath two or three

times a week will be sufficient for a child from the age of three to ten years. The temperature of the water should be from 90° to 95° Fahr., and the bath should be given at night. Boys and girls of older years, who have robust constitutions and full, active circulation, may with benefit indulge in a daily sponging with cool water (temperature 70° to 75° Fahr.), provided it is always done in a warm room; but a child under ten years of age, or one who has heart or pulmonary trouble, whose circulation is feeble, or one who is of nervous temperament, or who is not in a robust condition of health, should never be permitted to enter a bath during the winter in water under 90° Fahr. or to be sponged off in very cold water.

Children who enjoy and are benefited by their daily morning sponge-baths during the summer can not always carry it on with impunity during the autumn and winter; for the vitality of many is so poor during the early hours of the day, that the sponge-bath, even with tepid water, at this time exerts such an enervating effect that the functions of digestion are partially arrested, the appetite for breakfast is apt to be blunted, and a lassitude which is attributed to other causes is induced. Daily sponging the feet with cold water, when followed

by brisk friction with a towel, can be borne by all children during the winter months, and is especially beneficial when they complain of cold feet; sponging the throat and shoulders with cool water will also be beneficial and instrumental in warding off throat colds.

During the summer months, on account of the increased activity of the cutaneous glands, a very much larger amount of deleterious matter is eliminated from the skin than during colder weather; the bath at this period becomes, therefore, a greater necessity. A daily sponge or full bath is not only productive of increased healthfulness, but is refreshing and adds to the comfort of the body.

In giving a sponge-bath, the child should stand or sit in a tub, in which there is perhaps two or three inches of water, and be rapidly sponged; this should be supplemented by moderately vigorous friction with a coarse towel until the skin is in a glow.

I have frequently seen a rapid improvement in the health of a child by simply substituting a bath once a week for an accustomed daily bath, and ordering the entire body to be vigorously rubbed with a coarse towel night and morning. The skin of many children, especially those who do not take much ex-

ercise, is so inactive during the winter months, that it fails to exercise its accustomed duty of elimination.

In such cases, vigorous rubbing stimulates the circulation, thereby increases the activity of the sweat-glands and opens their ducts, causing far greater benefit than the daily sponging or bath. Rubbing the body rapidly with a coarse towel, that has been wet and wrung as dry as possible, is an admirable substitute, during cold weather, for the daily sponge-bath for children whose circulation is defective; the necessary cleanliness is secured, and a delightful glow and a feeling of warmth are experienced.

Salt water for bathing or sponging is extremely beneficial when the circulation is defective, and may be used two or three times a week with great advantage by children who perspire too freely, owing to weakness. The salt in the water is a stimulant to the relaxed cutaneous blood-vessels, and exerts a tonic effect upon the whole system. It is not necessary to go to the sea-shore to obtain the salt water, for it can be made in any household by mixing coarse salt or Ditman's sea salt with ordinary water. During the summer months, the health of many drooping children can be restored by the use of these tepid or cool "home sea-baths."

Early youth is not the period to attempt a hardening process. A protest has already been entered against the hardening by scanty clothing, and now my protest is offered against hardening by cold baths. Some children will come through the process successfully, and be held up as examples of the benefits of cold water, but the many unsuccessful, who will fall under the observation of the physician, are lost sight of.

In the effort to avoid too cold baths, care must be taken that an error is not made of giving too hot baths, for it must be remembered that hot baths are as depressing as the cold baths are exhausting.

The duration of the bath is also an important matter of consideration. A bath in cool water should never occupy longer than five minutes, and a full warm bath longer than ten minutes. If the child is permitted to remain longer in the water, more or less exhaustion will follow, which, if repeated daily, or several times a week, will result in an enfeebled condition of body. The bath in the ocean can often be extended to fifteen or twenty minutes if the surf is not too high. While bathing in the ocean, the activity of the body and the splash of the water stimulate the circulation and prevent the depression that would otherwise take place. The ocean

bath, while capable of restoring vigor and health to those who make proper use of it, is also a powerful agent for evil. The tonic effect of sea air and active country life, is too often done away with by the prolonged and too frequent sea-bathing. I could detail numerous cases of prostration directly induced by too free indulgence in the ocean bath; in some cases it has taken months to restore the health that has been impaired by the ocean baths. A child under fourteen should not be permitted to bathe in the ocean daily, nor should it be allowed to bathe when the temperature of the sea-water is under 70° Fahr.

Wading or paddling in the sea-water is not always devoid of danger. Children are frequently permitted this indulgence before the water is warm enough for a full bath, and as a consequence of the direct heat of the sun upon the head and upper part of the body, and of the cold water about the feet and legs, there are often induced sharp intestinal disorder and congestion of the liver, and more or less disturbance of the nervous system, evinced by headache and restlessness at night. With certain restrictions, wading in the sea-water is naturally allowable, but parents must be on their guard that delicate children do not remain too long in the enjoyment

of this pleasure, and that it is not indulged in when the water is cold.

The following quaint verses, published some time ago in England, by Mr. Joseph Power, bear so practically on this subject that they are here quoted in full :

THE SKIN.

There's a skin without and a skin within,
A covering skin and a lining skin;
But the skin within is the skin without,
Doubled inward, and carried completely throughout.

The plate, the nostrils, the windpipe, and throat,
Are all of them lined with this inner coat;
Which through every part is made to extend—
Lungs, liver, and bowels—from end to end.

The outside skin is a marvelous plan
For excreting the dregs of man;
While the inner extracts from the food and the air
What is needed the waste of the flesh to repair.

Too much brandy, whisky, or gin,
Is apt to disorder the skin within;
While if dirty and dry, the skin without
Refuses to let the sweat come out.

Good people all, have a care of your skin,
Both that without and that within;
To the first give plenty of water and soap;
To the last little else but water, we hope. .

But always be very particular where
You get your water, your food, and your air;

For if these be tainted or rendered impure,
It will have its effect on the blood, be sure.

The food which will ever for you be the best
Is that you like most and can soonest digest;
All unripe fruit and decaying flesh
Beware of, and fish that is not very fresh.

Your water, transparent and pure as you think it,
Had better be filtered and boiled ere you drink it;
Unless you know surely that nothing unsound
Can have got to it over or under the ground.

But of all things the most I would have you beware,
Is breathing the poison of once-breathed air ;
When in bed, whether out, or at home you may be,
Always open the windows and let it go free.

With clothing and exercise keep yourself warm,
And change your clothes quickly if caught in a storm ;
For a cold caught by chilling the outside skin,
Flies at once to the delicate lining within.

All you who thus kindly take care of your skin,
And attend to its wants without and within,
Need never of cholera feel any fears,
And your skin may last you a hundred years.

EDUCATION.

It is generally admitted that insanity and various diseases of the nervous system have materially increased during the past decade. One prominent cause for this is the great strain imposed upon the nervous system by the demands of our present civili-

zation. The requirements necessary to success in life are now far greater than was the case a score of years ago ; and to meet this increased tax requires a vigorous physique and a healthy nervous system, the foundations of which must be laid during the years of growth. It is important, therefore, that the child's development should be carefully guarded from everything that will detract from the possession of "*mens sana in corpore sano.*"

The nervous system, which controls and directs the working of the whole organism, must not be exhausted or overtaxed, for, when this occurs, all the functions of the body are more or less perverted in their action, and the full strength of nerve-force is frequently not regained. A parent's aim for his child during early youth should be that he may develop a healthy physique, rather than that he should obtain any amount of knowledge from books. The mental faculties should be allowed to develop slowly, as much as possible without stimulation, and the life should be more like that of a young animal. The early over-stimulation of the brain diverts the nerve-force from its most important duty of directing the growth of the body. By committing to memory too many nursery rhymes the mind is overtaxed, and harmful results are sure to follow. Young

children are often made wakeful at night, have dreamy, startled sleep, and are unable to take the noonday nap, which is so important for them, simply because the brain has been over-stimulated and excited by too much brain-work. Among the educated classes a child under six years of age will absorb ideas as rapidly as it is good for the brain, simply from association with older people. From the stories read aloud, and from the illustrated blocks and picture-books that are now so abundantly supplied to the nursery they will often learn the alphabet and possibly begin to spell out a few words.

The age at which a child should commence school duties opens a subject upon which there is a great diversity of opinion. The majority of physicians, and others who have made the hygiene of childhood a study, are convinced that a child under six, and in many instances under seven years of age, should not be permitted regular lessons, or have school duties, and that from the age of seven to ten, the confinement in the school-room should never be longer than from three to three and a half hours daily. Sending the child to school "to be kept out of mischief" is a dangerous expedient.

Kindergarten instruction is invaluable for children between the ages of four and seven years, and

its advantages are being more and more appreciated by parents. By it, physical and mental education are carried on side by side, in such a manner that there is no over-stimulation of the nervous system, the powers of observation and reasoning are developed, and the child is better equipped for the regular duties of school-life after the seventh year.

The attention to hygiene, now more thoroughly understood, and the more intelligent care of infants and children, have lessened, to a very great extent, the mortality of the young. As a result, there now survives a very much larger percentage of children who are delicate by inheritance, than was the case during the early days of our ancestors. This inherited delicacy is too often not recognized, and the child undergoes the same mental and physical regimen as children of stronger constitution, instead of being given time to mature more slowly and acquire a firmness of tissue and nerve strength, before the strain of school duties begins. It frequently happens that children who are delicate by inheritance have unusually bright minds and are quick and eager to learn. Parents should be very guarded in these cases to curb the child's precocity, and should direct their attention, during early youth, to strengthening the body, in order that at maturity

the physical strength may permit the full enjoyment of mental activity.

It should be carefully looked to that the hours for sleep and exercise, which I have already shown to be of great importance, are not drawn upon for study, otherwise physical degeneracy will follow as a result. The excessive demand of the brain for blood, which is always the case where there is over-study, deprives the other parts of the body of their share. Prolonged mental work induces more or less exhaustion of the nerve-force, thus depriving the nervous system of its ability to fulfil its mission of guiding and controlling the workings of the various organs of the body. The functions of digestion especially suffer from the faulty nerve-force, and this induces indigestion, and adds another cause of delicacy as the result of over-stimulation of mental powers.

The question of mental training for the young is too broad a subject for me to enter upon in this compendium; I merely wish to utter a few words of warning as to the danger of too early and forced instruction, some of the immediate effects of which are pallid countenance, frontal headache, puny, unhealthy looks, defective digestion, susceptibility to disease, feeble power of recuperating from illness,

and a fretful, irritable disposition. If the life of the child be spared, the future is liable to be blighted by a general want of strength, and by disorders caused by a defective nerve-force.

If any of the symptoms enumerated appear while the child is attending school, it should be ascertained whether the hours for sleep and exercise are not drawn upon for study, and, if this be the case, the number of studies should be at once reduced, or the child should be taken away from school for a time.

In seeking the cause of the loss of vitality, parents must be just in their analysis of the child's habits. The tendency to place the onus upon over-study is very great, for unquestionably over-mental application is very often the cause; more frequently, however, the failure in health is the result of a non-observance of hygienic laws. A child between ten and fifteen years of age, who takes a sufficient quantity of good nourishment, is properly clad, breathes a pure atmosphere, is compelled to take several hours' recreation daily, who secures from eight to ten hours' sound sleep every night, and is kept free from the excitement of theatres, concerts, and parties, runs little risk from mental application.

Care must be taken that a child is not sent

back to school too soon after having been ill with typhoid fever, scarlet fever, diphtheria, pneumonia, or other diseases where there have been serious constitutional disturbances. This care should be more particularly observed with girls from the age of twelve to fifteen—during the years of puberty. Too early return to school duties after a serious illness at this age, especially after typhoid fever, frequently will arrest the growth, and induce a delicacy which may take years to eradicate. The period of convalescence should be prolonged as much as possible, to enable the nervous system, which is always exhausted by prolonged fever, to thoroughly recuperate or regain the force lost during the illness.

SCHOOL HYGIENE.

The importance of school hygiene is too often overlooked by parents in their selection of a school. By school hygiene is meant the purity of the school-room air, its warmth, its cleanliness, its light, the sanitary surrounding of the play-ground, the duration of school hours and recess, and the suitability of the chairs and desks to the requirements of each child.

The imperfect observance of these hygienic ne-

cessities frequently occasions the headache, the loss of appetite, the languor, the disinclination for walking and exercise that many children experience on returning home from school. When the school-room is well lighted, the air pure and not overheated, the habit of attention and power of application are very greatly increased.

We have already explained the evils resulting from foul air in the house; the same results naturally follow the breathing of foul school-room air, where its effects bring also demerits to the child, by blunting his intellectual faculties. Restlessness and forgetfulness, often the result of foul air, are punished by the extra hour of detention after the school hour proper. This additional strain, added to the loss of dinner—for by this time the appetite is usually destroyed—reacts upon the child, bringing on the morrow an increasing dullness.

A wholesome and tempting lunch should be prepared, and the child should be given to understand that he must eat it, for continued mental work is more or less exhausting, and Nature calls for a restoration of the tissues used up or destroyed by exercise.

The desks and chairs should be so constructed that the book on the desk is not brought too near

the eyes of the scholar, nor should it be so low as to allow the child to bend the back while studying.

The instructors should have such knowledge of physiology and personal hygiene that they may intelligently enforce the laws of health so far as they relate to school-life. If this necessary knowledge were required of all teachers, there would be an increase in the average intelligence of the pupils, fewer absentees from school on account of illness; and rounded shoulders and crooked spines, the result of faulty positions at the school-desk, would be less frequently met with.

DISCIPLINE.

To enable a parent to carry out effectually the regulations necessary for the healthy growth of a child, it is essential that the child should be taught obedience and self-control. Lessons in obedience can be and should be commenced during the early months of infancy; for children, like animals, will intuitively recognize the necessity of obedience and the authority and right to be commanded when the commands are given in a kindly yet positive manner. When children rule their parents in matters of eating or dressing, or in any equally important duty of life, there is less likelihood that the principles neces-

rary for the maintenance of health will be fully enforced; so that in the hygiene of childhood, the mainspring is discipline in obedience and self-control. When this discipline is not enforced, when children are allowed to carry out their own ideas, to gratify their own wishes, and are not taught deference for the authority and opinion of their elders, they are apt to grow up selfish, and to exert an unpleasant influence upon those about them.

Unfortunately, many parents have not the ability to teach their children the habit of self-control, on account of possessing so little of it themselves, and children, from force of example, become self-indulgent. Then, too, when obedience is exacted, harshness, almost brutality, is often employed, instead of that firm but kindly insistence which calls forth a more cheerful acquiescence upon the part of the child. It is impossible to expend too much effort in forming the habit of self-control. When this is not cultivated, the child becomes a monster of selfishness, and a source of continual discomfort to himself and those about him; while, on the other hand, the cultivation of self-control insures a happier disposition, which will win friends in later years and also increase the prospect of prolonged life and vigorous health, making him a more evenly balanced man,

and widening his field of usefulness in the community in which he lives. In enforcing obedience, harsh terms are not necessary. A child, by nature, has an inquiring mind, and desires to know the causes of everything. While obedient, the reason of an order will frequently be asked; this should be gratified when feasible. At the same time, the child should be taught to have such confidence in his parents that he will understand, when a command is given, that it must be obeyed, even though the purport is not understood. Whenever it is proper to give the reason for a request, it is well to do so, for a child's ideas are thus educated, a habit of reasoning is developed, which is always important for the young mind, while at the same time it fosters a closer relationship between the parent and child.

The physician, on his round of visits among the sick, is only too familiar with the unfortunate, often disastrous results of want of self-control. How frequently the reply, when the doctor prescribes a certain diet or a certain mode of exercise, "Well, doctor, the child would have it," or "The child objected to doing as you said"! The little tyrant must be obeyed; the parents must comply with his wishes, even though the judgment decides against it.

With such children and parents the laws of health can not be judiciously followed. The child that makes free use of the words "shall," "won't," "sha'n't," or "will" has a diminished chance of recovering from serious illness.

These demonstrations of self-will are not so much the results of rebellion and temper as they are of faulty management during the early years of life upon the part of the parent. Recognizing the fact that children's dispositions differ in many cases, the seeming irritability may often be overcome by firmness, kindness, and explanation. It should not be forgotten, however, that the irritability of many children, and their disobedience, which is frequently dependent upon a condition of irritation, are also occasionally the results of impaired health. We see, then, how defective physical condition in a child disturbs calmness of disposition, and how the absence of self-control affects the physical health.

HYGIENIC REFLECTIONS.

During childhood the seeds of future health, vigor, and, I might add, happiness, are sown. "As we sow, so shall we reap." As Dr. Erasmus Wilson has very fitly remarked: "Youth, it can not be too

often repeated, is the time for storing health, both physical and moral ; and every act which can in any way impede or frustrate this all-wise intention of Nature will tend to lay the foundation of a weak and imperfect body, and shorten the days of its possessor." The laws of health are as fixed as other physical laws, and any infringement of them is certain to be followed by evil results ; so that if the body is not properly clad, if there is insufficient or improper nourishment, a deprivation of sleep, exercise, pure air, or sunshine, if the brain is overtaxed with studies, or if any of the laws governing health are violated during childhood, a penalty will be exacted—if not during the period of youth, certainly later in life.

Herbert Spencer says of children : "To tens of thousands that are killed, add hundreds of thousands that survive with feeble constitutions, and millions that grow up with constitutions not so strong as they should be, and you will have some idea of the curse inflicted on their offspring by parents ignorant of the laws of health. Do but consider for a moment that the regimen to which children are subject is hourly telling upon them to their life-long injury or benefit, and that there are twenty ways of doing wrong to one way of doing right, and you

will get some idea of the enormous mischief that is almost everywhere inflicted by the thoughtless, haphazard system in common use. Is it decided that a boy shall be clothed in some flimsy short dress and be allowed to go playing about with limbs reddened by cold? The decision will tell on his whole future existence, either in illnesses, or in stunted growth, or in deficient energy, or in a maturity less vigorous than it ought to have been, and consequently be a hindrance to success and happiness! Are children doomed to a monotonous dietary, or a dietary that is deficient in nutritiveness? Their ultimate physical power and efficiency as men and women will inevitably be more or less diminished by it. When sons and daughters grow up sickly and feeble, parents commonly regard the event as a misfortune, as a visitation of Providence. Thinking after the prevalent chaotic fashion, they assume that these evils come without causes, or that the causes are supernatural. Nothing of the kind! In some cases the causes are doubtlessly inherited; but in most cases foolish regulations are the causes. Very generally parents themselves are responsible for all this pain, this debility, this depression, this misery. They have undertaken to control the lives of their offspring from hour to hour; with cruel carelessness

they have neglected to learn anything about those vital processes, which they are unceasingly affecting by their commands and prohibitions; in utter ignorance of the simplest physiological laws, they have been year by year undermining the constitutions of their children, and have so inflicted disease and premature death not only on them, but on their descendants."

If a child manifests any bodily weakness that is not hereditary or that has not followed some acute illness, parents should ask themselves the question, Which of the laws of health has been violated? If careful scrutiny is given, it will be found that the impaired health has been induced by one or more of the following causes: Insufficient or improper nourishment, irregular or too hasty eating, whereby the functions of digestion are disturbed, and the power of assimilation of food impaired; drinking impure water, a prolific cause of lowering the tone of the system and bringing about mal-digestion; breathing impure air; insufficient sunlight; insufficient exercise in the open air; insufficient protection of the surface of the body, the non-wearing of flannels by night as well as by day during the winter months; insufficient sleep and repose; neglecting the daily action of the bowels and care of the skin; overtax-

ing the nerve-force by too much memorizing and overstudy.

The symptoms indicating a lowered vitality often come on so insidiously that they are overlooked by the parent until the health is seriously undermined. These symptoms may be briefly stated as follows: A change in the general demeanor, a depression with loss of the usual brightness and vivacity, often dullness and languor, or irritability, when the child is said to be "cross," sleeplessness, or a disturbed, restless sleep, frequently a tendency to fall asleep during the daytime, loss of flesh, pallid countenance, and disinclination to take the accustomed exercise.

Many hereditary physical tendencies may be overcome by special attention to the child's personal hygiene.

PUBERTY.

My remarks on the preceding pages apply alike to the boy and girl. I now desire to call special attention to the hygiene of the girl, during that period of transition from girlhood to womanhood, termed puberty, a time when too often, through neglect, the seeds of future ill health are sown.

A case in point will serve as a text for this important subject. I was once called to see a young girl of about fourteen years of age, who, from a state

of apparent health, was suddenly prostrated while at a child's party. She was taken home and remained in a condition of exhaustion for several weeks. Possessing an active temperament, she had always been quick and eager to learn. Her studies had been continued without intermission, save for a few school holidays, summer and winter, during the period of two years. This unnatural strain gave the system no rest, it burned up the nerve-force as rapidly as it was created. The overheated room at the entertainment had a depressing effect upon her, snapped the tension to which the nervous system had been subjected, and induced a condition of physical and nerve exhaustion. This depression was characterized by great feebleness of the digestive organs, a condition of torpidity, irregular heart-action, headache, great lassitude, but no fever. She remained in this condition for several weeks, gradually recovering her strength, but showing for many subsequent months an appearance of weariness in her countenance. It was necessary to abandon her studies for more than a year; and for several months after they were resumed, only light mental work was possible.

The early history of this young girl is but a repetition of many others which are constantly brought to the notice of physicians, where the education of

the mind is at the expense of the body ; where, at the period of life when the nervous structure is developing, when the reproductive organs are taking on new changes, the nerve-force is exhausted by overstimulation of the brain and does not obtain sufficient rest.

The question is often asked, Why is it that young children and girls of the present time can not dress and do as did their mothers and grandmothers at their age ? Excepting when there is hereditary delicacy, girls of the present generation will be found just as robust and just as capable of enduring strong physical exercise as their grandmothers were, always providing that their lives are adjusted in conformity with the laws governing health. Degenerated health is in most cases the result of exhausted nerve energy, improper diet, and an inactive, indoor life.

Let us contrast for a moment the life of the present generation with that of three generations ago. Our grandparents were, in a measure, "the survival of the fittest." Their manner of living was such that the majority of delicate offspring perished in early life ; and those who survived, and whose constitutions withstood the strain, were the possessors of a vigorous physique. Mothers must disabuse their minds of the common error that because they and

their mothers dressed, or rather undressed, in accordance with the fashion of their day, they may continue to clothe their children in the same way. In cases where bare legs, arms, and neck were adopted, evil results must have followed, and fallen, if not upon the individual herself, certainly upon her offspring, for the laws governing health were the same then as they are now. Those who are vigorous and strong can resist an evil influence longer than those who are weak.

We at present live in an essentially fast age. Our parents and grandparents lived a quieter life. There was then an absence of many of the excitements which call into action the nerve-force of the present generation. The rush and excitement that our every-day life call for, did not exist three quarters of a century ago, and consequently the tax upon the mind, and the wear and tear on the nerve-force, of both young and old, were not so great then as now. The home life of the present generation is, as a rule, full of ceaseless activity. The sensational events that the newspapers recount, reach the various homes, are too often discussed before children, and can not but have a stimulating effect upon their brains. The school-books of to-day, although in many respects most suitable, call for an amount of close applica-

tion and an exercise of thought that were not required of our grandparents.

The life of a century ago was comparatively a quieter one and less conducive to nerve exhaustion. Books were of a less stimulating character; the daily papers did not introduce into the family circle topics of such an exciting nature; there was an absence of the hurry and rush of modern travel and business. In other words, the life of to-day is productive of nerve excitability, to be followed by exhaustion, while the life of olden days was more favorable to nerve rest.

This comparison of the life of our grandparents with the life of the present generation is brought forward to show that in this era there is an increased call for nerve energy and the greatest danger of exhausted nerve-force, and emphasizes the importance for mothers and guardians of the young, to watch and guard carefully the nervous and physical condition of young girls as they bloom into womanhood.

The good book says that the sins of the fathers shall be visited upon the children unto the third and fourth generation. This is perfectly true of physical as well as of moral sins. How often do we see handsome, stately mothers and grandmothers of seventy or eighty years of age, with clear eyes, fine

complexion, erect carriage, and every appearance of good health, surrounded by children and grandchildren of delicate constitutions! This feebleness is not entirely due to the follies of the present manner of living, but may be largely due to the erroneous life of the mother or grandmother, who as "survival of the fittest" apparently grew physically and mentally to perfection, yet her fruit suffered from the result of her indiscretion. If this truth is fully recognized and borne in mind during the period of a young girl's development, there will be a distinct gain, not only to her in the possession of a healthy body and mind, but also to her future offspring. A tree in the orchard may recover from the shock of a cold spring, be rich in foliage and have a stately appearance during the summer, yet not be so productive in the quantity and quality of its fruit as a tree that has had no shock.

Aside from the suggestions already given for the care of children, there are a few fundamental rules to be observed by young girls at this time, the neglect of which only too frequently inflicts pain and suffering on body and mind in after-years. As the young girl approaches this time of life, a change is noticed in her demeanor and general habits. There is frequently a derangement of digestion; the

appetite is capricious and morbid ; there may be depression of spirits, languor, a certain amount of mental inactivity, and at times a restlessness and irritability of an hysterical nature. The child's mind should be prepared for the coming change. The mother should, by a few judicious words, put clearly before her daughter the nature of the coming event, and explain the necessity of careful obedience to the rules given her for the care of her health at this time. The great change that is going on in the system produces a disturbance in the circulation ; this affects the appetite, and occasions the symptoms above mentioned. Disturbances of all kinds should be promptly investigated and relieved, in order that the child may be kept as nearly as possible in a perfect state of health, and that all stumbling-blocks may be removed from Nature's way in this crisis she is bringing about. The digestion should be kept in perfect order, the bowels regular, and morbid cravings should not be indulged. Food should be of a simple, non-stimulating character. If there is any languor or debility, it should be met by tonics, plenty of fresh air, and good food. The depression of spirits or irritability may be relieved by regulating the digestion, by tonics, by release from all mental work, and by the society of cheerful companions.

I have called attention to the importance of protecting the body from cold; the directions given apply now with double force. In the climate in which we live it is absolutely necessary that the body of every individual should, in winter, be protected by flannel or silk worn next to the skin. When this is neglected, there is a great waste of nerve-force in Nature's effort to maintain the proper standard of animal heat. Extreme care should be paid to the protection of the feet. The reader is doubtless aware of the disastrous effect of a cold foot-bath during the monthly period; a severe congestion takes place in the pelvic region, followed frequently by inflammation and death. When the feet are constantly bathed in cold air, as they are when slippers are worn in the house in cold weather, and thin shoes in the street in winter, we have resulting more or less congestion, or oversupply of blood to the pelvic organs. Oftentimes this congestion is so slight that its presence is not apparent. If, however, it is maintained for any length of time, structural changes take place, and create the pain and distress that so many girls and women undergo. If any one organ of the body is already in a state of congestion, this congestion will be increased by cold to the extremities. We now see the importance of protecting the feet

and legs of the young girl when this change in her system is taking place. At this time the pelvic organs are in a condition of increased nervous irritability, a natural, healthy state of congestion ; but if we have thrown upon them an abnormal congestion, disease is the result. Therefore, one of the first rules for young girls, and I should add women also, to observe, is to protect the feet, not only during the menstrual period but at all times. When the physician urges the necessity of flannels being worn next the skin, both undershirt and drawers, and of protecting the feet by warm boots, and the avoidance of slippers in winter, many will use the argument that they are well and strong, and point to others who are also strong notwithstanding improper dressing. This is very poor reasoning : one may not realize the consequence of a wrong deed, but that does not make the deed right. Many who are insufficiently clad may say that they do not feel cold. This may be true, for the surface of the body and feet may cease to be conscious of cold, from habitual exposure, just as we cease to be conscious that our faces are cold, even when out-of-doors ; but, because the sensation of cold no longer warns us, it does not follow that the system escapes injury. Thousands and tens of thousands die in their effort to follow the example

of those foolhardy people who defy the laws of Nature.

Another important matter to observe at this time is the avoidance of too great mental strain. It must be remembered that the nervous system is called upon to perform a new duty; extra work is required of it, and one must be watchful that it is not overburdened. For several months before the establishment of menstruation, and during the first year of the change, school duties should be very light and at times omitted, if any symptoms indicating marked nerve disturbance supervene. This nerve disturbance is shown by restlessness or headache, excitability, irritability of temper, or by an hysterical condition, when the young girl cries without cause, or from a cause which, at other times, would have no effect upon her. If there are pallor of countenance, weariness, and loss of appetite which is not improved by tonics, school duties should be omitted for a time, and exercise in the fresh air substituted.

Sleep is one of Nature's greatest restorers; parents can not be too particular, therefore, that at this time especially the young girl obtains her full amount of sleep for nine or ten hours. The disastrous effects of overtaxing the brain at this time of develop-

ment, often follow one through the remaining years of life; the periodical sick headache, to which so many women are martyrs, is, in many instances, entirely the result of an overtaxed brain at the time of puberty. The nervous system of a girl is more highly organized, more sensitive to impressions, and therefore needs more rest and protection, than that of a boy. Her organs of generation require the full amount of nerve-nutrition for their perfect development. When the nerve-force is diverted by too great mental strain, or by repeated shocks to the system from cold, as the result of scanty clothing, an arrested development of the ovaries and uterus is very apt to occur, and after marriage there is a strong likelihood of a childless home.

Mental work should be relaxed, and in many cases entirely given up, during the few days of menstrual activity. "Nature has reserved the catamenial week for the process of ovulation, and for the development and perfection of the reproductive system. Previous to the age of eighteen or twenty, opportunity must be periodically allowed for the accomplishment of this task. Both muscular and brain labor must be remitted enough to yield sufficient forces for the work. If the reproductive machinery is not manufactured then, it will not be

later. If it is imperfectly made then, it can only be patched up, not be made perfect, afterward. To be well made it must be carefully managed." *

It is impossible to prescribe the amount of study that a young girl may safely undergo. We must base our determination of this question of mental work upon certain tangible facts or conditions. If there is any impairment of the general health or any irregularity of the menstrual functions, the amount of study should be curtailed, or interdicted altogether.

If there is a hysterical or emotional tendency, it is an indication of a marked lowering of the nerve-force and an unbalanced nervous system. The girl should be taken from school; and exercise in the open air, with early hours for going to bed, should be ordered. If this emotional or hysterical condition is not promptly checked during the years of puberty, it will be fostered and will grow as the burden of school duties increases, and in all probability result in a complete collapse of health after leaving school or after marriage.

There is a phrase, common in some families, that is calculated to mislead and do great harm by the careless and apologetic manner with which it is

* "Sex in Education," by Edward H. Clark, M. D., p. 41.

uttered. The daughter is said to be "so nervous" that "she can not be thwarted in her wishes." "Nervousness," which should rather read "nervelessness," is synonymous with irritability, and is a condition that should warn mothers of impending danger. The nerves are crying out that their power of resistance has departed. A state of nervousness is not natural to any girl, and, where it exists, it is a sure indication either that the nervous system has been overtaxed in some way, or that it is being irritated by some morbid condition, or that the body is not supplied with blood rich enough to furnish sufficient nourishment to the nervous system. This state of nerve-irritability should not be met with the amount of condemnation that it so often receives, but should be carefully studied; the cause, when found, removed without delay, and every aid to the re-establishment of health should be afforded.

In the management of girls of an hysterical or nervous temperament, a seemingly undue attention should be carefully avoided, lest it should arouse a craving for sympathy which leads to a condition of *quasi*-invalidism. The two extremes—that is, one of neglect or one of exaggerated care—are constantly met with, and both are equally reprehensible.

I have already explained the systemic disturb-

ance arising when there is not a daily action from the bowels. During puberty, the evil resulting from failure to form this habit is very great, for we have, in addition to the systemic disturbance, a pressure upon the blood-vessels and nerves in the pelvic regions, which interferes with the circulation and with the healthy growth of the tissues in these parts, and is often the direct cause of pain and distress at the monthly period.

Dr. Thomas Addis Emmet, in speaking of young girls during puberty, says: "To enable her to reach the highest physical development, the young girl, in the better class of society, should pass the year before puberty, and some two years afterward, free from all exciting influences. She should be a child as long as possible, and made to associate with children. Her dress, diet, and habits of life should be carefully looked after, as if she were a child, and, above all, the habit of regularity should be enforced in all details. Her mind should be occupied by a very moderate amount of study, with frequent intervals during school hours of a few moments each, and to be spent, when possible, in the open air. There should be no studying at night under any circumstances. Each menstrual period should be passed in the recumbent posture, until the system becomes

accustomed to the new order of things, and the habit of regularity is fully established. She should neither expose herself to cold nor overexercise during the twenty-four hours before the expected period, and at the same time lessons should be discontinued.” *

During the later years of girlhood, as near an approach as is possible to mental and physical rest should be observed during the few days of indisposition each month. Long walks, running rapidly up and down stairs, dancing, skating, too prolonged standing, practicing on the piano, or any strong physical exercise, should be forbidden, and severe mental strain should be avoided. The want of sufficient rest during these few days is a prolific cause of the pelvic pains which are so prevalent among young women. Most of the uterine disorders that young girls are troubled with are induced by personal neglect during the catamenia. The beginning of trouble may frequently be traced to a long walk, or skating, dancing, or wetting the feet at the menstrual period. This overexercise and cold to the feet transform a naturally healthy congestion of the pelvic organs into a morbid congestion, which remains after the few days of functional activity is over, and is the beginning of the suffering and de-

* “Principles and Practice of Gynæcology,” p. 21.

rangement that affect, through reflex influence, the healthy working of other parts of the body.

Although due care regarding sponging and bathing the body during the catamenia is generally observed, indiscretions are not infrequently met with. When a child has been accustomed to a daily cold bath, the necessity for omitting it, as well as the full warm bath at this time, should appeal to every reasonable person. Sponging certain parts of the body with tepid water, for the purpose of cleanliness, is permissible, but even this should be done with care, and in a warm room, for a chill to the skin during these important days is attended with more or less serious consequences. The luxury and comfort of a full bath after several days' abstinence frequently lead to the taking a cold, full, or ocean bath on the day immediately following the cessation of the period. This should never be permitted. At least thirty-six or forty-eight hours should elapse before a full cold bath, for the pelvic organs remain in a state of congestion for some time after the cessation of the menstrual flow. A tepid or full warm bath (not too hot) is permissible and gives comfort.

Another cause creating pelvic trouble, aside from physical imprudences and wasted nerve-force, is

that of tight lacing. The compression that a tightly laced corset produces about the waist disturbs the abdominal and pelvic circulation, crowds the pelvic organs downward, causes misplacement, and retards the recovery from uterine congestion.

When a sufficient time has elapsed to show that the catamenia is fully and regularly established, a girl who is healthy and strong, and free from any suspicion of pelvic difficulty, may pursue her daily vocations during the monthly period. A slight amount of walking is conducive to the healthy action of the liver, to proper performance of the digestive functions, to the daily action of the bowels, and to a free circulation in the skin; but unnecessary standing, heavy lifting, and undue activity must be avoided. When there is any form of pelvic trouble, however slight, rest must be enforced as much as possible.

It is evident that nature never intended that woman should be entirely incapacitated for a period of from four to six days every month. But the physical degeneration that is brought about through many and constant transgressions of the laws of health, and through hereditary defects, calls for a greater care of the person during these important days. This applies more to girls in the upper walks of life;

for in this class indolent luxury, and obedience to the dictates of fashion, bring about the greatest number of cases of physical degeneracy.

Although my remarks on the hygiene of childhood are chiefly intended for the guidance of very young children, and of girls during the establishment of catamenia, most of the suggestions are equally important and applicable, during the later years of development, until maturity has been reached. As the young girl advances in her "teens" her thoughts turn to social pleasures or to personal adornments. She will often assert and exercise her own judgment in matters pertaining to health, and in doing so will, through ignorance or vanity, infringe upon the laws of health and bring upon herself sorrow and suffering during the years to come. This latter period is also an important one, and requires the same close attention to the protection of the body, sufficient sleep, exercise, sunshine, and proper nourishment, that we have already shown to be necessary for younger girls.

The following example is but too often the repetition of the life of many a young girl of from fifteen to eighteen years of age: Her studies are numerous and difficult, and call for close application, often both afternoon and evening being devoted to

them. She goes to bed exhausted, awakes in the morning with a feeling of languor, without appetite, frequently with headache and nausea. She can not eat any breakfast, and will start for school after taking a cup of coffee or tea and, perhaps, some slight article of food. She remains in school until two o'clock, taking during recess some indigestible lunch procured from the baker, and returns home in the afternoon with impaired appetite, and too tired to take more than a short walk. Whenever it is noticed that a young person eats little at breakfast, feels languid in the morning, and is too tired to take a brisk walk in the afternoon, it is an indication that something is radically wrong, and it is highly important that medical advice should be sought. When this is obtained, it is found, in the vast majority of cases, that other factors besides studies enter into the cause of the ill-health.

Untold mischief results from the practice common with many a school-girl of hurrying off to school either without breakfast or after having hastily swallowed her food. The system, deprived of this needed support, is utterly unprepared to meet the demands upon its endurance for four or five hours of steady application. If every parent would establish the rule that a child should not be permit-

ted to go to school in the morning without having leisurely eaten a substantial breakfast, it would materially add to the healthfulness of the child, and diminish the evil results of close application to study.

The physician often finds, however, a difficulty in enforcing the directions given for a proper regimen of diet suitable for a young girl in her "teens," for the commandment, "Children, obey your parents," is in many families reversed, reading, "Parents, obey your children," and the young girl follows her own ideas as to what and when she shall eat.

At this age, social entertainments are not infrequently the direct cause of impaired health and strength. The too frequent attendance upon parties, sociables, concerts, and the theatre during school-days means a deprivation of a certain amount of sleep, extra fatigue, the breathing of impure air, and, above all, the nerve-exhaustion from the excitement. School duties require all the nerve-force that can be spared from the building process which is still going on in the system, so that the combination of undue social excitement with difficult lessons has a damaging effect upon the health. A judicious mother will not allow this combination, but it is altogether of too frequent occurrence in many homes.

A full amount of sleep, and exercise in the open air, should be insisted upon during this important period of life, and great care should be observed that the hours set apart for these essential requisites for health are not encroached upon for study and social pleasures.

Physicians are constantly consulted by parents who say that their daughters' health is being undermined by school duties. There is frequently a good deal of truth in the statement that they are studying beyond their years; but we also find, only too frequently, that the mother is ignorant of the laws of health, and that, through this ignorance, she is not doing her duty to her child. She is often responsible for her daughter's ill-health by permitting her to sit up too late at night, attending parties and concerts, by allowing her to wear thin boots and unsuitable underclothing, by not insisting upon sufficient nourishment, and by permitting too much exercise at the monthly period. With careful attention to personal hygiene, and avoidance of an excess of excitement and of a too luxurious life, the mother will find that her daughter will be capable of greater mental work, and that the school duties will not so often be incompatible with vigorous health.

The culture of the body should be as much an

object of a mother's solicitude as that of the mind. As she recognizes the responsibility and necessity of cultivating the mental and moral qualities of her daughter, so should she feel that there is an equal obligation to cultivate a perfect physique. She should seek to inform herself upon the ways and means of preserving the health of her daughter, and make it an all-important object—I might say, a religious duty—to avoid everything which may prove an obstacle to the development of a perfect woman.

“If we would give our girls a fair chance, and see them become and do their best by reaching after and attaining an ideal beauty and power, which shall be a crown of glory and a tower of strength to the republic, we must look after their complete development as women. Wherein they are men, they should be educated as men; wherein they are women, they should be educated as women. The physiological motto is, educate a man for manhood, a woman for womanhood, both for humanity. In this lies the hope of the race.” *

* “Sex in Education,” by E. H. Clark, M. D., p. 19.

APPENDIX.

MORTUARY STATISTICS.

It may not be without interest, as bearing upon the subject of the hygiene of childhood, to glance at the mortuary tables of some of the large cities of the United States, and also to note the comparative mortality of large and small cities. Upon investigation it will be found that during the past twenty years a gradual lowering of the death-rate among children has taken place, and that the percentage of deaths is noticeably less in the smaller cities.

In New York city in 1867 the percentage of deaths among children under five years of age to the total mortality was 52·9 ; while in 1888, twenty-one years later, the percentage was 43·2, a lowering of 9·7 per cent, or an equivalent to saving in 1888 the lives of 3,896 children under five years of age. From 1865 to 1875 the average mortality under five years of age in New York city was 49·61 per cent.

Mortuary Table for 1873.

LOCALITY.	Total number of deaths.	Total number of deaths under five years of age.	Percentage of deaths under five years of age to total mortality.
New York city.....	29,084	14,182	48·7
Philadelphia, Pa.....	15,224	6,260	42·7
Brooklyn, N. Y.....	10,968	5,536	50·5
Chicago, Ill.	9,557	5,676	59·3
St. Louis, Mo.	8,551	4,014	46·9
Boston, Mass.	7,869	3,289	41·7
Baltimore, Md.....	7,817	3,379	43·2

Average mortality under five years of age for 1873, 47·4 per cent.

Mortuary Table for 1888.

LOCALITY.	Total number of deaths.	Total number of deaths under five years of age.	Percentage of deaths under five years of age to total mortality.
New York city.....	40,175	17,360	43·2
Philadelphia, Pa.....	20,372	7,268	35·6
Brooklyn, N. Y.....	18,061	8,019	44·3
Chicago, Ill.	16,645	7,533	45·2
Boston, Mass.....	10,179	3,599	35·2
St. Louis, Mo.....	9,015	3,659	40·5
Baltimore, Md.....	8,936	3,881	43·6

Average mortality under five years of age in 1888, 41 per cent.

A comparison of the average death-rate in 1873 (47·4 per cent) with that of 1888 (41·0 per cent) exhibits a reduction of 6·4 per cent, or the saving of the lives of 7,896 children in the above-mentioned cities in 1888.

Percentage of Deaths of Children under Five Years of Age to the Total Mortality in Seven Cities of Small Size.

Poughkeepsie, N. Y., in 1888.....	32·6
Newburgh, N. Y., in 1888.....	34·4
New Haven, Conn., in 1888.....	34·1
Hartford, Conn., in 1888.....	27·8
Newport, R. I., in 1888.....	31·4
Lynn, Mass., in 1888.....	33·4
Portland, Me., in 1888.....	22·4

Average mortality under five years of age in 1888, 30·8 per cent.

Table of Deaths in the United States according to the Census.

YEAR.	Total number of deaths.	Total number of deaths under five years of age.	Percentage of deaths under five years of age to total mortality.
1870	493,263	203,213	41·4
1880	756,893	302,624	39·9

A review of the above tables conveys an instructive and forcible lesson upon the beneficial observances of the laws of health—especially so, when it is understood that the lowering of the death-rate in the large cities during the past sixteen years has been coincident with increased interest in sanitation and the surveillance on the part of local boards of health over the habitations of the poor and of public buildings, as well as their watchfulness in preventing in a great measure the sale of unwholesome food.

The causes for the difference in the death-rate of

children, in large and small cities, lie in the facts that in small cities the inhabitants breathe a purer air, they are not so crowded together, their food is of better quality, their nervous system is not so exhausted from excitement, and their whole conditions of life are more favorable to health.

These considerations are powerful inducements for still greater attention to sanitary reform and the hygiene of childhood.

THE END.

WORKS ON HYGIENE.

Health Primers. Edited by J. LANGDON DOWN, M. D., F. R. C. P., HENRY POWER, M. B., F. R. C. S., J. MORTIMER-GRANVILLE, M. D., JOHN TWEEDY, F. R. C. S. In square 16mo volumes. Cloth, 40 cents each.

- I. EXERCISE AND TRAINING.
- II. ALCOHOL: Its Use and Abuse.
- III. PREMATURE DEATH: Its Promotion or Prevention.
- IV. THE HOUSE AND ITS SURROUNDINGS.
- V. PERSONAL APPEARANCE IN HEALTH AND DISEASE.
- VI. BATHS AND BATHING.
- VII. THE SKIN AND ITS TROUBLES.
- VIII. THE HEART AND ITS FUNCTIONS.
- IX. THE NERVOUS SYSTEM.

Hygiene for Girls. By IRENEUS P. DAVIS, M. D. 16mo. Cloth, \$1.25.

Dangers to Health: A Pictorial Guide to Domestic Sanitary Defects. By T. PRIDGIN TEALE, M. A., Surgeon to the General Infirmary at Leeds. With 70 Lithographic Plates. 8vo. Cloth, \$3.00.

Health and Education. By REV. C. KINGSLEY. 12mo. Cloth, \$1.75.

Physical Education; or, The Health Laws of Nature. By FELIX L. OSWALD, M. D. 12mo. Cloth, \$1.00.

New York: D. APPLETON & CO., 1, 3, & 5 Bond Street.

D. APPLETON & CO.'S PUBLICATIONS.

APPLETONS' STUDENTS' LIBRARY. Consisting of Thirty-four Volumes on subjects in Science, History, Literature, and Biography. In neat 18mo volumes, bound in half leather, in uniform style. Each set put up in a box. Sold in sets only. Price per set, \$20.00. *Containing:*

Homer. By W. E. Gladstone.	} 1 vol.	The Apostolic Fathers and the Apologists. By Rev. G. A. Jackson.
Shakspeare. By E. Dowden.		
English Literature. By S. A. Brooke.	} "	The Fathers of the Third Century. By Rev. G. A. Jackson.
Greek Literature. By R. C. Jebb.		
Philology. By J. Peile	} "	Thomas Carlyle: His Life, his Books, his Theories. By A. H. Guernsey.
English Composition. By J. Nichol.		
Geography. By G. Grove.	} "	Ralph Waldo Emerson, Philosopher and Poet. By A. H. Guernsey.
Classical Geography. By H. F. Tozer.		
Introduction to Science Primers. By T. H. Huxley.	} "	Macaulay: His Life, his Writings. By C. H. Jones.
Physiology. By M. Forster.		
Chemistry. By H. E. Roscoe.	} "	Short Life of Charles Dickens. By C. H. Jones.
Physics. By Balfour Stewart.		
Geology. By A. Geikie.	} "	Short Life of Gladstone. By C. H. Jones.
Botany. By J. D. Hooker.		
Astronomy. By J. N. Lockyer.	} "	Ruskin on Painting.
Physical Geography. by A. Geikie.		
Political Economy. By W. S. Jevons.	} "	Town Geology. By Chas. Kingsley.
Logic. By W. S. Jevons.		
History of Europe. By E. A. Freeman.	} "	The Childhood of Religions. By E. Clodd.
History of France. By C. M. Yonge.		
History of Rome. By M. Creighton.	} "	History of the Early Church. By E. M. Sewell.
History of Greece. By C. A. Fyffe.		
Old Greek Life. By J. P. Mahaffy.	} "	The Art of Speech. Poetry and Prose. By L. T. Townsend.
Roman Antiquities. By A. S. Wilkins.		
Sophocles. By Lewis Campbell.	} "	The Art of Speech. Eloquence and Logic. By L. T. Townsend.
Euripides. By J. P. Mahaffy.		
Vergil. By Prof. H. Nettleship.	} "	The World's Paradises. By S. G. W. Benjamin.
Luivy. By W. W. Capes.		
Demosthenes. By S. H. Butcher	} "	The Great German Composers. By G. T. Ferris.
Milton. By S. A. Brooke.		
		The Great Italian and French Composers. By G. T. Ferris.
		Great Singers. First Series. By G. T. Ferris.
		Great Singers. Second Series. By G. T. Ferris.
		Great Violinists and Pianists. By G. T. Ferris.

APPLETONS' ATLAS OF THE UNITED STATES. Consisting of General Maps of the United States and Territories, and a County Map of each of the States, printed in Colors. Imperial 8vo. Cloth, \$1.50.

New York: D. APPLETON & CO., 1, 3, & 5 Bond Street.

D. APPLETON & CO.'S PUBLICATIONS.

APPLETONS' HOME BOOKS. Complete in 12 volumes, 12mo.
Handsomely printed, and bound in cloth, flexible, with illuminated design, 60 cents each.

The twelve books are also put up in three volumes, four books to the volume, in the following order, handsomely bound in cloth, decorated. Price of each of these volumes, \$2.00, or \$6.00 the set, in box.

L.

BUILDING A HOME. By A. F. OAKLEY. Illustrated.

II.

HOW TO FURNISH A HOME. By ELLA RODMAN CHURCH.
Illustrated.

III.

THE HOME GARDEN. By ELLA RODMAN CHURCH. Illustrated.

IV.

HOME GROUNDS. By A. F. OAKLEY. Illustrated.

V.

HOME DECORATION. Instructions in and Designs for Embroidery, Panel and Decorative Paintings, Wood-carving, etc. By JANET E. RUUTZ-REES, author of "Horace Vernet." Illustrated.

VI.

THE HOME NEEDLE. By ELLA RODMAN CHURCH. Illustrated.

VII.

AMENITIES OF HOME. By M. E. W. S.

VIII.

HOUSEHOLD HINTS. A Book of Home Receipts and Home Suggestions. By Mrs. EMMA W. BABCOCK.

IX.

THE HOME LIBRARY. By ARTHUR PENN, editor of "The Rhymester." Illustrated.

X.

HOME OCCUPATIONS. By JANET E. RUUTZ-REES. Illustrated.

XI.

HOME AMUSEMENTS. By M. E. W. S., author of "Amenities of Home," etc.

XII.

HEALTH AT HOME. By A. H. GUERNSEY, and I. P. DAVIS, M. D., author of "Hygiene for Girls."

New York : D. APPLETON & CO., 1, 3, & 5 Bond Street.

WORKS OF ARABELLA B. BUCKLEY.

The Winners in Life's Race ;

OR, THE GREAT BACKBONED FAMILY. With numerous Illustrations. 12mo. Cloth, gilt, \$1.50.

Life and Her Children.

Glimpses of Animal Life from the Amœba to the Insects. With upward of One Hundred Illustrations. 12mo. Cloth, \$1.50.

Fairy-Land of Science.

With numerous Illustrations. 12mo. Cloth, \$1.50.

"It deserves to take a permanent place in the literature of youth."—*London Times*.

"So interesting that, having once opened the book, we do not know how to leave off reading."—*Saturday Review*.

A Short History of Natural Science and the Progress of Discovery,

FROM THE TIME OF THE GREEKS TO THE PRESENT DAY. For Schools and Young Persons. With Illustrations. 12mo. Cloth, \$2.00.

"A most admirable little volume. It is a classified *résumé* of the chief discoveries in physical science. To the young student it is a book to open up new worlds with every chapter."—*Graphic*.

"The book will be a valuable aid in the study of the elements of natural science."—*Journal of Education*.

For sale by all booksellers ; or sent by mail, post-paid, on receipt of price.

New York: D. APPLETON & CO., 1, 3, & 5 Bond Street.

LIBRARY OF CONGRESS



0 022 169 363 2